CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN

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DECLARATION BY THE CANDIDATE

I hereby declare that this dissertation entitled **"CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN"** is a bonafide and genuine research work carried out by me under the guidance of **Dr.A.M.AMALA HAZEL M.D(S),Ph.D., Lecturer** Department of Kuzhandhai Maruthuvam, National Institute of Siddha, Chennai -47, and the dissertation has not formed the basis for the award of any Degree, Diploma, Fellowship or other similar title.

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CERTIFICATE

This is to certify that this dissertation work on **"CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN"** has been carried out by **Dr.M.AMALA**, (Reg No.321514201) during the year 2015-2018 in the Department of Kuzhandhai Maruthuvam, National Institute of Siddha, Tambaram sanatorium, Chennai under my guidance and supervision in partial fulfilment of regulation laid by The Tamilnadu Dr.M.G.R Medical University, Chennai for the final M.D (Siddha), Branch IV –KUZHANDHAI MARUTHUVAM Examination to be held in OCTOBER – 2018. This dissertation work is not reprinted or reproduced from the previous dissertation work.

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INTRODUCTION

Siddha system is an ancient system of medicine and was found by Siddhars who have attained siddhi (spiritual perfection). Siddhars who really discovered something for the good of humanity are seers, thinkers and men of action. They are creative genius. Siddha system plays a wide ranged role in the field of pediatrics. It ensures the health of the children with its astonishing herbal formulations right from their conception, to prevent the illness. Children's health reflects the Nation's health and wealth and they are the most vulnerable group in the society. They can become ill easier since they aren't built with a good immune system and they are exposed to several pathogens from the surrounding environment.

Psoriasis is a common, chronic inflammatory disorder that affects the skin, nails & joints of ~ 2.0 % - 3.5 % of the general population with a strong genetic basis. Childhood psoriasis is a well recognized entity but its true prevalence is not known. Psoriasis begins in childhood in approximately one – third of the cases. Children accounted for 12.5 % of total psoriasis over a period of 13 years. Age of onset ranged from 4 days to 14 years, male and female incidence was equal & plaque type of psoriasis was the most common type in children.

As much as 40 % of adult patients with psoriasis have reported manifestations of this condition in childhood with at least one – third of the patients demonstrating features of psoriasis before the age of 16.1 years.

When psoriasis starts in childhood it has more adverse implications. Extensive research has focused on the comorbidities associated with psoriasis and its effects on the quality of life (QOL) of the child and the adult caretaker. Children suffering from psoriasis have a higher prevalence of obesity, diabetes mellitus, hypertension, juvenile arthritis, psychiatric diseases. Psoriasis can be a life – affecting disease with a potentially profound impact on physical, emotional & social functioning & overall QOL in children.

Siddha system describes 4448 diseases and its treatment. The clinical features of Kaalanjaga padai may be correlated to Psoriasis as described in Modern science. Psoriasis is a lifelong disorder subject to unpredictable remissions and relapses. Single episodes are uncommon and in the most frequent variety an episode in the childhood is followed by a series of attacks, each lasting approximately for 3 – 6 months.

The visitation of children with psoriasis has increased considerably from the past few years in National Institute of Siddha. Patients suffering from Psoriasis are facing much social stigma than other dermatological problems.

So the author is obliged to carry out this study to evaluvate the therapeutic effectiveness of the Amukkura Chooranam and Vettiver Thylam cited in Brahmamuni Karukkadai Soothiram 380 and Aathma Rakshamritham Ennum Vaidya Sara Sangraham respectively for this disease. Drugs with hot potency have the action of curing skin disease. Hence trial medicine which has pungent and astringement taste with hot potency was selected for this disease.

Siddha medicine is one which cures ailment of body, mind, one which prevents recurrence of ailment and one which makes us attain immortality. So in the view of long term outlook regarding the treatment plan in the paediatric group the author has chosen the present study.

Since selected subjects are in vulnerable group (i.e) that is paediatric the choosen drug internal as well as external are purely herbal. In modern system of Medicine the treatment for almost all types of paediatric psoriasis cases will be either steroids or UV therapy (there are chances of convertion of psoriasis to carcinomatous condition if done more than 30 sittings) which has got severe side effects . So if we are able to treat such a condition with pure herbal drug will be a great achievement, since the severity of the illness will affect body, mind, and quality of living. So a cost effective and drug with a lesser adverse effect is the need of the hour.

AIM AND OBJECTIVE

AIM:

The aim of the present clinical study is TO EVALUATE THE EFFICACY OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) IN THE TREATMENT OF KALANJAGAPADAI (PSORIASIS) IN CHILDREN.

OBJECTIVES:

Primary objective:

To evaluate the efficacy of AMUKKARA CHOORANAM (Internal) and VETTIVER THYLAM (External) in the treatment of KALANJAGA PADAI (PSORIASIS) in children.

Secondary objective:

To study occurrence of new lesion, anywhere else in the body after intake of trial medicine.

Also,

- To collect the authorial measures and literature reviews of KALANJAGA PADAI in ancient siddha and modern literatures.
- Have an idea of the incidence of the disease with regard to age, sex, precipitating factors socio economic status, food, kaalam etc.
- To explore the efficacy of siddhar's diagnostic principles.
- To utilize the modern investigation methods to confirm the diagnosis and prognosis.
- To study the biochemical and physiochemical analysis of the trial drug
- To assess the response of lesion with respect to

  Seasonal variation

  Stress

  Dietary modification etc.

REVIEW OF LITERATURE

SIDDHA ASPECT OF DISEASE (KAALANJAGA PADAI)

In siddha system, skin diseases are brought under "*kuttam*", *kuttam* means cutaneous affections in general, the term used for various skin diseases.

DEFINITION OF SKIN DISEASES:

Skin diseases may appear all over the body on a sudden or gradually spreads and affects the nerves, blood vessels, mucus membrane etc. The affected part may have increased or decreased sensitiveness and inflammation. Skin becomes glossy and thick red or yellowish white patches with various size.

It is marked by

- Itching
- Burning sensation
- Blisters
- Perforating ulcers

FACTS OF SKIN DISEASES:

1. It is a diseases believed due to a reflection of one's previous births (karma)
2. Some authors of Indian medical science attribute the origin of this disease to several pathological causes. Such as,
    - Venereal diseases
    - Syphilis
    - Ring worm
    - Snake bite
    - Poisonous insects bite or sting
    - Infection
    - Inheritance

AETIOLOGY:

The siddha literature explain the causes of *kuttam* as mentioned below

- In the text ***Yugimuni 800***

"விளம்பவே மிகுந்தஉஷ் ணந்தன் னாலும்
மிகுந்த சீதளத்தாலு மழற்சி யாலும்
வளம்பவே மந்தத்தால் வாந்தியாலும்
மகத்தான பெண்ணோடு மருவலாலும்
கிளம்பவே கிலேசங்கள் மிகுத லாலும்
கெடியான வுரக்கங்கள் டைத தாலும்
தளம்பவே மயிருகற்கள் தவிடு மண்கள்
சாதத்திற் பருகலால்மிக்குங் குஷ்டம்"

Excessive heat and cold, laziness, sleep in day time, sexual indulgence robbery etc. These habits are prominent among the factors which lower the immune mechanism of the body (Udalvanmai) and make the body liable to disease. Added to the above, excessive intake of food items which are hard to digest , imbalanced diet and vomiting due to indigestion , food contaminated with stone and hair , chronic mental depression , intention to spoil others , greed , abusing God and elderly people , neglecting orphans and beggars , cursing the elders would also affect the body and mind disturbing the mechanism of the body.

- In **Thirumoolar Vaithiyam**

"வியாதியில் மூவாறுவிளங்கிய குட்டங்கேள்
சுயாதிக் கிரந்தி சுழல் மேகத்தா லாறும்
பயாதி மண்ணுளப் பல வண்டினா லெட்டும்
நீயாதி புழுநாலாய் நின்றதிக் குட்டமே"

Six types of skin diseases are caused by venereal disease
Eight types of skin diseases are caused by insect bites
Four types of skin diseases are caused by worm infestations

❖ In **Guru Naadi Nool**

''கிருமியால் வந்த தோடம் பெருகவுண்டு
கேட்கி லதன் பிரிவுதனை கிரமமாகப்
புழுக்கடி போல் காணுமது கிருமியாலே
செருமி வரும் பவுத்திரங்கள் கிருமியாலே
தேகமதில் சொறிக்குட்டம் கிருமியாலே
துருமி வரும் சுரோணிதங் கிருமியாலே
சூட்சமுடன் கிரிசைப்பால் தொழில் செய்வீரே''.

As per Guru Naadi Nool text, the skin disease is caused by worm infestations.

In the text book **Siddha Maruthuvam Sirappu ,** the cause of kuttam is due to

- Unknown etiology
- Genetic cause

The text **Agasthiyar Paripooranam** – 400 describes the (Kanma Varalaru) as a causative factor for this disease

''பழவினையால் விஷப்பூச்சி கடித்த தோஷம்
பாதகர்க்கு ஒரு நாளும் தீர்வதில்லை
உளவினையால் லூடாபிக கொள்ள வந்த
உண்மையது அறியாமல்மூர்க்கஞ் செய்வார்
களவினையுந் தீர்வதில்லை கடினமெத்த
கருணையுள்ள பூரணத்தில் கண்காட்சி
அடவினை நீகாணுமுன்னெ அகலச் சொல்லி
அடையாளம் விரல் குறுகு மின்னங்ககேளே''.
''விரல்குறுகுங்கால திமிரும் விஷம் போலேறும்
மேய்யழுந்துந் தலை சுழலும் அவளுக்கும் மேனி
பரமான தேகமெல்லாந் தடித்து வீங்கும்
பாதமெல்லாம் வெடித்துமிக்குபுண்ணு காணும்
சரசமுடன் சொறி கரப்பான் பணம் போல் தோணும்
சந்தையாமே விந்தைகெடுத் தடித்து வீங்கும்
பாருலகி லிந்நோய்க்கு மருதீயாதே
நல்லோரைப் பழிதித குட்டங்கன்னமாமே''.

In **Agathiyar Paripooranam 400** it has been mentioned that diseases which are caused due to sins committed in the previous birth will be cured only if Kanmam is expiated. Siddhar Agathiyar mentioned that Kanmam (Genetic predisposition) is the main cause for kuttam in the text **Kanma Kandam** as follows,

"சேர்ந்த குட்டமொடு குறைநோய்கள்
சேதிகேள் மலராத வரும்பு கொய்தல்
தாரிந்த சீர் செந்து வதைகள் செய்தல்
தாய் தந்தை மனது நொந்து ரோகந்தானே
தானென்ற தெய்வவுருத் தனைழித்தல்
சார்வான பெரியோர்கள் தமைப் பழித்தல்
கானென்ற நந்தவனம் பூச்செடிகள் வெட்டல்
கருமமடா சரீரத்திற் காசு போலே
யூனென்ற வுடம்பெல்லாம் மொட்டு மொட்டா
யுடன் வெளுத்து குறையோயுதிரஞ் சிந்தும்
வானென்ற கருமங்கள் தீர்ப்பதற்கு
வரையென்று சொல்வேன் கேள் நந்தவன்மையே".

- Plucking the flower buds
- Cruelty to animals
- Destroying statue of god
- Abuse elderly people
- Destroying forests and gardens

SIGNS AND SYMPTOMS:

- The predominant symptoms are
- Roughness of skin
- Itching sensation
- Black color of the blood
- Rapid growth and spread of ulcers

CLASSIFICATION OF KUTTAM:

According to Thiru T.V. SambasivamPillai there are 18 types of Kuttam, as listed below:

1. Neerkuttam - Leprosy with serous exudation
2. Venkuttam - White Leprosy
3. SoriKuttam - Psoriasis
4. Karunkuttam - Black Leprosy
5. Perumkuttam - True Leprosy
6. Senkuttam - Macular Leprosy
7. Pori kuttam - Leprosy with Granules
8. Virikuttam - Leprosy with Fissures
9. Yerikuttam - Leprosy with burning sensation
10. Viral kuraikuttam - Lepramutilans
11. Sadaikuttam - Leprosy with confluent ulcers
12. Yaanaikuttam - Thick skinned Leprosy
13. Thimirkuttam - Anesthetic Leprosy
14. Viranakuttam - Ulcerated Leprosy
15. Kaaikuttam - Nodular Leprosy
16. Azhikuttam - A form with sloughing ulcers
17. Kirumikuttam - Leprosy with microbes
18. Aarakuttam - Incurable Leprosy

Classification by Dhanvanthiri:

‘‘வாதபித்தச் சிலேற்பனத்தின் வாதரோகந் தானெனினும்
தீது குட்டமேழுந் தீரும் குட்டம் பதினொன்று
மோதுங் குட்டம் பதினெட்டுடன்றோய வையினுற்பவமும்
பேதக்குணமு வியாதியின முன்பிறக்கும்குணமு முரைப்பேனே’’

1. Kabala Kuttam
2. Sarmeega Kuttam
3. Kideepa Kuttam
4. Mudhumba Kuttam
5. Visharchiga Kuttam
6. Mandalakira Kuttam
7. Aguvai Kuttam
8. Alasa Kuttam
9. Thathru Kuttam

10. Pundareegha Kuttam
11. Bama Kuttam
12. Kaghanandhi Kuttam
13. Sithma Kuttam
14. Vibadhiga Kuttam
15. Sadhariga Kuttam
16. Vispodaga Kuttam
17. Sarmathala Kuttam
18. Ven Kuttam

Classification according to Yugi Muni Vaidhya Chinthamani :

“முத்தாகுங் குட்டந்தான் பதினெட்டுக்கும்
முனியான யூகிநான் சொல்லக் கேளாய்
புத்தாகும் புண்டரீக குட்டத் தோடு
பெருகுகின்ற விற்போடக குஷ்ட மாகும்
பத்தாகம் பரமகுஷ்டம் கேசரி குஷ்டம்
பரிவான கர்ணகுட்டம் சிகும குட்டம்
குட்டமாம் பரப்பரிச குட்ட மொடு
குடிலமாம் விசர்ச்சீக குட்ட மாகும்
வுட்டமாம் வையாதி குட்ட மொடு
மருவலாங் கீடபகுட்டஞ் சர்ம தேவம்
திட்டமா தேத்திருக் குட்ட மோடு
சித்துமா குட்டஞ்சா காறுகுட்டம்
துட்டமாஞ் சுவேதகுட்டந் தன்னா டொக்கச்
சுயம்பான பதினெட்டு குட்ட மாச்சே”.

1. Pundareegam - Padarthamarai
2. Virpodagam - Koppulaperunoi
3. Bamam - Siranguperunoi
4. Gajasarmam - Yaanaitholperunoi
5. Karnam - Kaadhuperunoi
6. Sikuram - Tholperunoi
7. Krishnam - Karuperunoi
8. Avudhumbaram – Athikkaiperunoi
9. Mandalam - Valayaperunoi

10. Abarisam - Valiperunoi
11. Visharchigam – Soriperunoi
12. Vibhadhigam - Senkuttam
13. Sarmathalam - Tholvedippuperunoi
14. Kidepam - Pandritholperunoi
15. Thethuru - Thadippuperunoi
16. Sithuma - Naaperunoi
17. Sadharu - Puraiperunoi
18. Suvedham - Venkuttam

- According to sage Yugi, Kuttam have been classified as 7 types as per alteration of three humors

1) Valikuttam
2) Azhalkuttam
3) Iyyakuttam
4) Valiiyyakuttam
5) Valiazhalkuttam
6) Azhaliyyakuttam
7) Mukkutrakuttam

- According to sage Yugi, ten types of kuttam are curable

1) Virpodagam
2) Bamam
3) Kajasarmam
4) Kiruttinam
5) Avuthumbaram
6) Thaththuru
7) Siththuma
8) Kideebam
9) Satharu
10) Sarumam

- According to sage Yugi, eight types of kuttam are uncurable

1) Pundareegam
2) Karanam
3) Siguram
4) Mandalam
5) Abarisam
6) Vasarchigam
7) Vibathigam
8) Suvetham

The clinical features of Virpodagakuttam, Sadharukuttam and Thethrukuttamare resemble as Kaalanjaga padai.

விற்போடகக் குட்டம்

"புதுமையாய்ச் சரீரமெங்குந் தினவுண் டாகும்
பொருவெடியாய்த் திக்கெனத்தீக் கொழுந்து போல
மெதுமையாய் விட்டெரியும் நல்லபாம்பின்
விஷப்படம் போல் தடித்து வெளுப்புமாகும்
சுதுமையாய்மிகக் சொரியுஞ்சிவப்புமாகும்
தூக்கமொடு சஞ்சலமும் மிக வுண் டாகும்
கதுமையாய் தோலெல்லாந் தடிப்புண்டாகும்
கனத்த விற்போடகமான குட்டந்தானே ".

- **யூகிமுனி வைத்திய சிந்தாமணி 800 செய்யுள் 498**

Characterized by elevated skin lesions with erythema and itching. Burning sensation will be present. These entities are associated with anxiety and despair.

தேத்துரு குட்டம் :

"சர்மந்தான் சிவப்பாக வட்டணித்துச்
சலவைபோல் வெளுக்குமே தினவுண்டாகும்
கூர்மந்தான் ரோகமது மிகவுண்டாகும்
மயிரெல்லாஞ்சுருண்டுமே உண்டையாகும்
கர்மந்தான் பித்த சேட்டுமமி குக்கும்
காயந்தான் கதித்துமே திமிருண்டாகும்
தர்மந்தான் சடமெல்லா முதலாகும்
தாக்கான தேத்துருக் குஷ்டந்தானே

- **யூகி முனி வைத்திய சிந்தாமணி 800 செய்யுள் 511**

Annular erythematous lesions with whitish appearance, itching, oedema and curling of hairs are the characteristic clinical features in this disorder.

சதாரு குட்டம்

"சித்தானதண்டிப்பாய் ரத்தவர்ணம்
செழும்பச்சை வெள்ளையாய்ச் சிவப்புமாகும்
எத்தான வெரிப்போடு தினவுமாகும்
எளிதான சேத்துமவாத துற்பத்தி
பத்தான கரடுகட்டிப்புண்ணுமாகும்
பாம்பு தோல் போற்றிரைந்துபருத்துகாணும்
வெத்தான மூக்கோடு காத கன்னம்
மிகத்துடிப்பாஞ் சதாரு குஷ்டந்தானே

- யூகி முனி வைத்திய சிந்தாமணி 800 செய்யுள் 513

Characterized by skin lesions covered with silvery white scales, erythema, itching, burning sensation, and thickening of ears, cheeks and nose

KAALANJAGA PADAI

Synonyms: Venparusedhil, sedhiludhirnoi

Definition

According to the definition *siddha maruthuvam sirappu, kalanjaga padai* is a chronic non-infectious, recurrent, inflammatory disorder of the skin characterized by reddish, slightly elevated patches covered with silvery white scales. In Siddha system, Skin disorders are brought under the clinical entity "*kuttam"*.

Aetiological Factors

- Unknown aetiology
- Genetic cause

Triggering Factors

- Tonsillitis
- Respiratory disorders
- Allergic disorders
- Stress and strain

- ❖ Anxiety, depression
- ❖ Seasonal variations
- ❖ Certain drugs(eg) *Thambira chenduram*

Clinical Features

- ❖ The lesions are patches and macules which are red in colour with raised margin and the lesions are covered by silvery, white and rough and thick scales.
- ❖ The patches are coin shaped. In some, the shape may be either round or oval.
- ❖ There are variations in the size and shape of patches according the site.
- ❖ The skin lesions occur all over body, commonly knee and back of the elbows affected.
- ❖ Excessive scaling and generalized erythema develops all over the body.
- ❖ In children this lesion may resemble water drops and this may occur in scalp and face.
- ❖ Mild oozing will be present if flexural region(axilla, groin & infra mammary regions) are involved in females.
- ❖ One fourth of patients have nail involvement like pitting and dimpling in nature.
- ❖ 7% of patients develop affection of joints as psoriatic arthropathy.

Prevalence of *kaalanjaga padai*

- ❖ 2% of population are affected by psoriasis
- ❖ 5-12 years is the commonest age group
- ❖ Remission and relapses occur
- ❖ Females are commonly affected them males

Pathology of *kaalanjaga padai*

- ❖ The *kaalanjaga padai* affects the skin and mucous membrane

MUKKUTTRA VERUPADUGAL ((PATHOGENESIS):

- Uyir thathukkal
- Udal thathukkal
- Kalamarupadu (seasonal changes)
- Thinai (living lands)
- Udal vanmai

UYIR THATHUKKAL

Human body is influenced by three Thathus such as Vaatham, Pitham and Kabam. They are responsible for normal physiological conditions of the body. In Kaalanjaga padai, the following Mukkutram are commonly affected,

Disease occurs due to the derangement in

MUKKUTRA IYAL:

The function of the three uyir thathus

a) Vali – Kattru + Veli
b) Azhal – Thee
c) Iyyam – Neer + Mann

The alteration of three thathu in their reaction to extrinsic or intrinsic factors results in disharmony. This altered harmony and balance variation of the three results in disease. Their natural ratio (1:1/2:1/4) to each other is discerned by the physician at the wrist and each nadi is individually assessed for its strength, speed and regularity.

Seasonal variations of *kaalanjaga padai*

Vaatham

The activities of Vatham are increased during the period of *Aani* (june-july) ,*Aadi* (july-augest)

Table 3.1 VATHAM:

The term vatham denotes vayu, dryness, pain and flatulence. Based on functions and locations it is classified into ten types. They are tabulated below.

S.No	Vatham	General Features	Changes in Kaalanjaga Padai
1	Piranan (Uyirkkaal)	Responsible for respiration and it is necessary for proper digestion.	Normal
2	Abanan (Keel nokkukkaal)	Responsible for all the downward forces such as voiding of urine, stools, semen, menstrual flow.	Normal
3	Viyanan (Paravukaal)	Dwells in the skin and is concerned with the sense of touch, extension and flexion of the parts of the body and distribution of the nutrients to various parts of the body.	Affected (skin colour changed into white)
4	Uthanan (Melnokkukaal)	Responsible for all kinds of upward motion such as nausea, vomiting etc.,	Normal
5	Samanan (Nadukkaal)	Start from the umblicial cord, Samanan spread out upto the lower limbs and responsible for the balance of other four vadha and digestion.	Affected (It cannot control the other vayus)
6	Nagan	Helps in opening and closing of eyelids.	Normal
7	Koorman	Responsible for vision, lacrimation and yawning.	Normal
8	Kirugaran	Induces appetite, salivation, all secretions in the body including nasal secretion and sneezing.	Affected
9	Thevathaththan	Induces and stimulates a person to become alert, get anger, to quarrel, to sleep etc.,	Normal
10	Dhananjeyan	Resides in the cranium and produces bloating of the body after death. This leaves from the body after 3 days of death, forming a way through the skull.	Normal

1. Viyanan - Erythematous changes in the affected areas of skin
2. Samanan - Due to other vaayu, it is affected
3. Kirukaran - Loss of appetite

Table 3.2 PITHAM:

It is the thermal life force of the body. It is sub divided into five types. They are

S.No	Pitham	General Features	Changes in Kaalanjaga Padai
1	Anarpitham	Peps up the appetite and aids in digestion.	Normal
2	Ranjagapitham	Responsible for the colour and contents of blood.	Normal
3	Saathagapitham	Controls the whole body and is held responsible for fulfilling a purpose.	Normal
4	Pirasagapitham	Dwells in the skin and concerned with the shine, glow, texture and its complexion.	Affected (skin colour Changed into white)
5	Alosagapitham	Responsible for the perception of vision.	Normal

Table 3.3 KABHAM:

It is responsible for the stream line functions of the body and maintains body's defence mechanism intact. It is again classified into 5 types.

S.No	Kabham	General Features	Changes in Kaalanjaga Padai
1	Avalambagam	Lies in the respiratory organs, exercises authority over other kabhas and control the heart and circulatory system.	Normal
2	Kilethagam	Found in stomach as it seat, moistens the food, softens and helps to be digested.	Normal
3	Pothagam	Responsible for the perception of taste	Normal
4	Tharpagam	Presents in the head and is responsible for the coolness of the eyes, sometimes may be referred to as cerebrospinal fluid.	Normal
5	Santhigam	Necessary for the lubrication and the free movements of joints.	Normal

Table 3.4 UDAL KATTUGAL

Our body consists of seven Udalthathukkal. It gives strength and structure to our body. In Kaalanjaga padai patients, Saaram, Senneer, KozhuppuandEnbu are commonly affected.

S.No	Udal kattugal	General Features	Changes in Kaalanjaga Padai
1	Saaram (Digestive essence)	Responsible for the growth and development. It keeps the individual in good temperament and it enriches the body.	Affected
2	Senneer (Blood)	Responsible for the color of the blood and for the intellect, nourishment, strength of the body.	Affected
3	Oon (Muscle)	Gives lookable contour to the body as needed for the physical activity. It feed the fat next day and gives a sort of plumpness to the body.	Normal
4	Kozhuppu (Fat)	Lubricates the organs to facilitate frictionless functions.	Normal
5	Enbu (Bones)	Supports and protects the vital organs, gives the definite structure of the body and responsible for the posture and movements of the body.	Normal
6	Moolai (Bone marrow)	Nourishes the bone marrow and brain which is the centre that controls other system of body.	Normal
7	Sukkilam/Suronitham (Sperm/Ova)	Responsible for reproduction	Normal

Saaram : Dryness, roughness, tiredness

Senneer : Erythematous patches present

Table 3.5 PARUVAKALAM:

S.No	Perum pozhuthugal	Mukkutra marupaadugal
1	Kaar kaalam (Aavani & Purattasi) Mid-August to Mid-October	VATHAM - Vaetrunilai valarchi PITHAM – Thannilai valarchi
2	Koothir kaalam (Iypasi & Karthigai) Mid-October to Mid-December	VATHAM – Thannilai adaidhal PITHAM - Vaetrunilai valarchi
3	Munpani kaalam (Margazhi & Thai) Mid-December to Mid-February	PITHAM – Thannilai adaidhal
4	Pinpani kaalam (Masi & Panguni) Mid-February to Mid-June	KABHAM – Thannilai valarchi
5	Elavenir kaalam (Chithirai & Vaikaasi) Mid-April to Mid-June	KABHAM – Vaetrunilai valarchi
6	Mudhuvenir kaalam (Aani & Aadi) Mid-June to Mid-August	VATHAM– Thannilai valarchi KABHAM – Thannilai adaidhal

THINAI (LAND):

Siddhars classified the lands into five types. They are

1. Kurunji – Mountain range
2. Mullai – Pastoral area of the forest
3. Marudham – The fertile river bed
4. Neidhal – The coastal region
5. Paalai – Arid desert

- Kabha diseases will occur in Kurinji land. Pitha diseases occur in Mullai land. Vadha diseases occur in Neidhal land. Staying in Paalai land is not good to health. Marudham land is the fertile area where no disease occurs. So, Marudham land is the best one to stay in.

- The winter season gives good health to the man, early summer and later rainy gives moderate health. Whereas early rainy and later summer are more prone to diseases, that's why siddhars called it as Aanaga kaalam.

Table 3.6 RELATION BETWEEN MUKKUTRAM, KAALANGAL AND THINAIGAL:

Mukkutram	**Paruvakaalam (Seasons)**			**Thinai**
	Thannilai valarchi (Accumulation)	**Vaetrunilai valarchi (Aggravation)**	**Thannilai adaidhal (Alleviation)**	
VATHAM	Mudhuvenil kaalam	Kaar kaalam	Koothir kaalam	Vatha disease is more prevalent in Neidhal land.
PITHAM	Kaar kaalam	Koothir kaalam	Munpani kaalam	Pitha disease is more prevalent in Mullai land
KABHAM	Pinpani kaalam	Elavenil kaalam	Mudhuvenil kaalam	Kabha disease is more prevalent in Kurunji land

UDALVANMAI

It is classified into 3 types, they are

- **Iyarkai Vanmai**

  Natural immunity of the body by birth

- **Seyarkai Vanmai**

  Improving the health by intake of nutritious food materials and medicines.

- **Kaala Vanmai**

Development of immunity according to age and the environment. When the Udalvanmai is affected there may be possibilities of occurrence of Kaalanjaga padai.

IYMPORIGAL

In Kaalanjaga padai, Mei is affected. Roughness of the skin, white silvery scales is seen. Kanmenthriyam In Kaalanjaga padai,Kai, Kaal affected as there is difficulty in using the limbs.

Piniyariyum muraimai (Diagnostic Methods)

Piniyariyum muraimai is the method of diagnosing disease. It is based on the following principles:

- Poriyalaridhal
- Pulanalaridhal
- Vinaathal

Poriyalaridhal and Pulanalaridhal means examining the patient's "Pori" and "Pulan" with that of physician's "Pori" and "Pulan". "Vinaathal" is a method of enquiring about the details of the patient's problem from his own words or from his parents or attenders who are taking care of the patient, when the patient is not able to speak (or) if the patient is a child.

ENVAGAI THERVUGAL (Eight tools of examination) are:

1. "நாடிப்பரிசம் நாநிறம் மொழிவிழி
   மலம் மூத்திரமிவை மருத்துவராயுதம்".
2. "மெய்க்குறி நிறந்தொனி விழிநாவிரு மலம் கைக்குறி"

- தேரையர்

3. "தொகுக்கலுற்று அட்டவித பரீட்சை தன்னை
   குலக்கமுலறும் பண்டிதரே தெளிவாகப்
   பகுக்கறிய நாடியை நீ பீடித்து பாரு
   பகர்கின்ற வார்த்தையைப் பார் நாவை பாரு
   வகுக்கரிய தேகமதை தொட்டுப்பாரு
   வளமான சரீரத்தின் நிறக்கத்தைப் பாரு
   சகிக்கரிய மலத்தைப்பார் சலத்தைப் பாரு
   சார்ந்த விழிதனைப்பார்த்து தெளிவாய்க் காணே".

- அகத்தியர் வல்லாதி 600

- **Naadi (Pulse):**

In Kalanjaga padai, the following types of Naadi could be felt. They were,

a) Vaathapitham
b) Vaathakabam
c) Pithakabam

❖ **Sparisam:**

In case of Kaalanjaga padai, slightly raised well defined dry erythematous macules or plaques, covered with white silvery scales can be noticed in affected areas

❖ **Niram (complexion):**

In case of Kaalanjaga padai, white patches with silvery scales could be noticed at affected areas.

❖ **Mozhi (voice):**

In case of Kaalanjaga padai no abnormalities were observed.

❖ **Vizhi (eye):**

In case of Kalanjaga padai, no abnormality was seen in Vizhi.

❖ **Moothiram (urine):**

Collection of urine for the determination of Neerkkuri and Neikkuri, is an important diagnostic method

❖ **Neerkkuri**

Prior to the day of urine examination the patient is instructed to take a balanced diet. The patient should have good sleep. After waking up in the morning, the first urine voided is collected in a clear wide mouthed glass container and is subjected to analysis of "Neerkkuri" within one and a half an hour. In Kalanjaga padai patients, straw coloured urine was noticed.

❖ **Neikkuri**

The collected specimen (Urine) is kept open in a glass dish or china clay container. It is to be examined under direct sunlight, without any shaking of the vessel. Then add one drop of gingelly oil without disturbing the urinary specimen and the neikkuri was noted in direct sunlight and the diagnosis is concluded as follows,

Character of Vaathaneer

"அரவென நீண்டிடில் அ.ீதே வாதம்"

When the oil drop spreads like a snake, it is called "Vaathaneer"

Character of Pithaneer

“ஆழிபோற் பரவின அ.ஃதே பித்தம்”

When the oil drop spreads like a ring, it is called “Pithaneer”

Character of Kabaneer

“முத்தொத்து நிற்கின் மொழிவதென் கபமே”

When the oil drop appears like a pearl, it is called “Kabaneer”

Character of Thonthaneer

Snake in the ring, ring in the snake, snake in the pearl and ring in the pearl are the characters of Thonthaneer (mixed type). In Kaalanjagapadai, theNeikkuri was Vaathaneer, Pithaneer and Kabaneer.

Anubanam

“அனுபானத்தாலே யவிழ்தம் பலிக்கும்
இனிதான சுக்குஇஞ்சி – பினுமுதுகால்
கோமயம்பால்முலைப்பால் கோநெய்தேன் வெற்றிலைநீர்
ஆமிதையா ராய்ந்து செய்யலாம்”

- **தேரையர் வெண்பா**

Pathiyam (Dietary Regimen)

In mild conditions of the disease, salt and tamarind can be taken in little quantities. When the condition is severe, tamarind should be avoided and salt must be consumed after frying.

“பத்தியத்தினாலே பலணுண்டாகும் மருந்து
பத்தியங்கள் போனால்பலன் போகும் பத்தியத்தில்
பத்தியமே வெற்றி தரும் பண்டிதர்க்கு ஆதலினால்
பத்தியமே உத்தியென்று பார்”

- **தேரையர் வெண்பா**

“பெருகுஞ் சோள மிறுங்கும் பெருங்கம்பு
வரகு காயுடன் வாழையுடன் காயொடு
உரைகொள் பாகற் கெளிற்றுமீன் உண்டிடில்
விரிவ தாய்க்கரப் பானுமிகுந்ததே”

“புளிதுவர் விஞ்சுங் கறியார் பூரிக்கும் வாதம”

- பதார்த்த குண சிந்தாமணி

Diet Regimen (Pathiyam)

- Fish, crab, prawn are some seafoods should be avoided.
- Curd, Jaggery, oil, White gram should be avoided.
- Non vegetarian diet should be avoided.
- Alcohol beverages should be avoided.
- Brinjal should be avoided.
- In severe cases tamarind should be avoided.

NIRAIVU:

Substances used for neutralizing the three humors are

"ஒன்றிய வாத பித்த கபமிவையுயரா வண்ணம்
நன்றறு கறிகளெல்லாம் நாளுமே சமைப்பாராய்ந்த் தோர்
தின்றிடு மிளகு மஞ்சள் சீரக யர்ந்த காயம்
வென்றி கொள் சுக் கோடேலம் வெந்தியம் உள்ளி சேர்த்தே"

- பதார்த்தகுண சிந்தாமணி

The patients are well motivated. The nature and course of the disease is explained to them, Life-style modification advised. Substances advised for Vaatha disease are:

"செங்கழுநீர் கோடைத் தேன்மிளகு நல்லெண்ணெய்
தங்கு பெருங்காயத் தழுதாழை – எங்கெங்கும்
கட்டு சிறுமுத்து நெய் கோதில் உளுந்திவைகள்
வாட்டு மனிலத்தை மதி."

- **பதார்த்தகுண சிந்தாமணி**

Honey collected during summer, pepper, gingely oil, asafoetida, castor oil and black gram are very useful in Vatha disease.

KAAPPU (Prevention)

As per siddha system the aetiology of the diseases are various. The ultimate speciality of siddha system is to prevent the diseases.

Yogam:

Skin is the reflex of mind and so we should treat not only the physical body but also treat mind and soul. There by patients are advised to do yogam practice. Asanas like,

- Savasanam (Resting posture)
- Padhmasanam (Lotus posture)
- Pranayamam (Breathing excersise)

are all beneficial to relieve stress and strain.

MODERN ASPECT OF DISEASE (PSORIASIS)

History of Psoriasis

The Greeks had a word for it—psora, "to itch"—which could qualify as the understatement of the centuries. It has been known since ancient times and was originally considered a type of leprosy, It is one of the most common human skin diseases. Noted physician Galen (133-200 A.D.) identified psoriasis as a skin disease through clinical observation and was the first to call it psoriasis.

World Psoriasis Day

Sunday, October 29, is World Psoriasis Day—a day dedicated to the 125 million people around the world living with psoriasis.

ANATOMY OF SKIN:

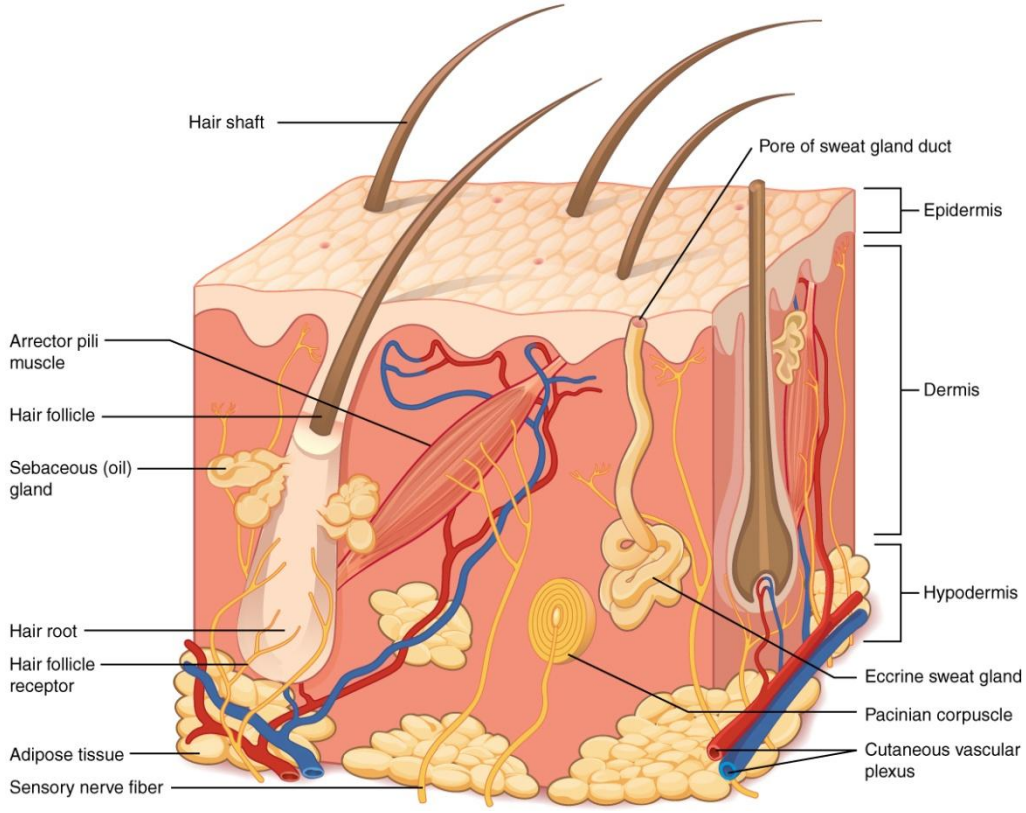


Fig. 3.1

The skin is the protective covering of the body; Skin covers the entire surface of the human body. The human skin shows wide variations in structure.

1. Thick skin found in Scalp, Ear lobes, Palms, Soles.
2. Thin skin over the rest of the body. .

- The average thickness of the skin is about 1 to 2 mm.
- In the sole of the foot, palm of the hand and inter scapular region, it is considerably thick measuring about 5 mm.
- Skin is very thinnest in eyelids and penis measuring about 0.5mm only. The skin is composed of a

  - ✓ Superficial epithelial layer – The epidermis.
  - ✓ Connective tissue layer – The dermis or Corium.
  - ✓ Another Connective tissue layer loose in texture – The hypodermis or subcutaneous layer.

STRUCTURE OF EPIDERMIS:

The epidermis is formed of nonvascular stratified epithelium. The average thickness of the skin is between 0.07 mm to 0.12 mm. Certain parts like the soles of the feet and the palms of the hands it is very thick ranging from 0.8mm to1.4mm.

- ✓ Squamous epithelium is 10 to 11 cells thick in the palms and soles.
- ✓ Squamous epithelium is 3 to 4 cells over the eyelids.
- ✓ The nutrition is provided to epidermis by the capillaries of dermis.

The epidermis is mainly divided into two main systems,

1. Malpighian system which forms the bulk (Keratinocytes)
2. Pigmentary system which produce pigment (Melanocytes)

In addition of four types of cells. These are

1. Keratinocytes
2. Melanocytes
3. Langherhans cell
4. Intermittent cells

In the epidermis, another unique cell known as Markel cell or Hascheiben or Touch cells here found at the base of epidermal ridges, which are in contact with nerve

fibers, they are mostly present in palms, soles, nail beds, oral and genital epithelium, and act as slow touch receptors.

LAYERS OF EPIDERMIS:

Epidermis layer can be made out microscopically in a section perpendicular to the skin surfaces, the following 5 main layers of the epidermis.

These are

1. Stratum germinatum
2. Stratum malpighii
3. Stratum granulosum
4. Stratum lucidum
5. Stratum corneum.

1. STRATUM GERMINATUM:

- This is the deepest potion of the epidermis and it is composed of columnar cells placed perpendicular to the skin surface, it is also known as basal cell layer.
- The whole of the epidermis germinates from this stratum hence the name "stratum germinatum"
- Any trauma to this layer would result in scarring; trauma above the level of this layer heals without scarring.
- Melanoblasts or melanocytes are found in this layer.
- Stratum germinatum contain granules of pigment called melanin.

2. STRATUM SPINOSUM:

- It is also known as stratum malpighii or the prickle cell layer.
- It is superficial to the basal cell layer.
- It is composed of several layers of polyhedral cells connected to each other by intercellular bridges.
- Desmosomes present in this layer only.
- Half size desmosomes occur on the under surface on the under surface of the basal cells, which play an important part in the anchoring the epidermis and dermis.
- All keratinocytes adhere together by desmosomes.

3. STRATUM GRANULOSUM:

- It is superficial to the stratum malpighii
- It is composed of flat, fusiform cells which are one to three layers thick, the. Cells contain irregular granules of keratohyalin and lysosomal enzymes and cystine rich proteins.
- Lamellar granules also known as odland bodies.
- These odland bodies take part in the waterproof barrier function of the epidermal permeability.

4. STRATUM LUCIDUM:

- Superficial to the stratum granulosum.
- It is pale, wavy looking layer known as stratum iucidum
- It is made up of many layers of flattend epithelial cells.
- This layer contains refractile droplets of eleidin.

5. STRATUM CORNEUM:

- This is the most superficial layer, the outer surface of which is exposed to the atmosphere. It is also known as horny layer. It is the outer most layer and consists of dead cells, which are called as corneocytes.
- It consists of many layers of non nucleated, flattened, cornified cells
- It is this layer which becomes thicker with the application of intermittent mechanical pressure.
- This layer is thickest in the palms of the hands and the soles of the feet, but thinnest on the outer surface of the lips, on the glans penis and the eyes.

DENDRITIC CELLS OF EPIDERMIS:

- These are melanocytes, Langherhans cells, and indeterminate cells.
- The melanocytes are the pigment producing cells and are derived in foetal life from neural crest.
- The cells of langherhans are found about the middle of epidermis.
- The junction of epidermis and dermis is formed by basement membrane(Basal lamina)

DERMIS: (CUTIS VERA OR CORIUM)

Dermis is profusely supplied with blood vessels, Thickness of dermis is 1 to 3 mm, it is made up of dense collagen fibers and fibroblasts. The collagen fibers contain the enzyme collagenase which is responsible for wound healing.

Dermis is made up of 2 layer, these are

1. Superficial papillary layer
2. Deeper reticular layer

1. SUPERFICIAL PAPILLARY LAYER:

- ✓ The layer projects in to the epidermis, it contain blood vessels, lymphatics and nerve fibers
- ✓ Dermal papillae are finger like projections arising from the superficial papillary dermis.

2. DEEPER RETICULAR LAYER:

- ✓ It is made up of reticular and elastic fibers.
- ✓ It is found around the hair, sweat glands and sebaceous glands.
- ✓ It also contain mast cells, Nerve ending, lymphatics and fibroblasts.

APPENDAGES OF THE SKIN:

The appendages of the skin are five These are,

1. Sweat gland
2. Sebaceous gland
3. Hair
4. Arrectorpili muscle
5. Nails.

1. SWEAT GLAND:

These are 2 types

- ✓ Eccrine gland.
- ✓ Apocrine gland.

ECCRINE GLAND:

- They are the ordinary, small sized 0.3 mm to 0.4 mm.
- Sweat glands are distributed all over the skin except on the beds of nail, margins of lips and the glans penis
- Over 3 million sweat gland are present at birth.

APOCRINE GLAND:

- Glandular portion is very large and may measure 3 mm to 5 mm in diameter.
- They occur in the axilla, areola and nipples of breasts, umbilicus, around the anus and the genitalia.
- They are specialized sweat glands, and their secretion is odoriferous with a secondary sexual significance.

2. SEBACEOUS GLAND:

- They are scattered all over the integument in association with the hair follicles.
- They are absent in the hairless portions of the body like the palms of the hands, the soles of the feet.
- The ducts of the sebaceous glands are lined by stratified squamous epithelium which is continuous with the external sheath of the hair, and with the malpighian layer of epidermis.

3. HAIR:

- Hair is found on almost every part of the body surface except on the palms, soles, the dorsal surface of the terminal phalanges, the inner surface of the labia, the inner surface of the prepuce and the glans penis.
- Hairs differ in length, thickness and colour in different parts of the body and in different races.
- There are three types of hair, long, short, thick bristles.
- Hair grows about 1-2 cm per month.

Hair follicle and its hair can be anatomically divided in to 3 segments

- ✓ Infundibulam
- ✓ Isthumus
- ✓ Inferior.

4. ARRECTOR PILI:

- ❖ Arrectorpili muscles are the small bundles of plain muscles fibers, which is extend from the connective tissue sheath of the hair follicles to the epidermodermal junction.
- ❖ When these contract under the effect of cold or emotions. This move the hair into a more vertical portion is called appearance of ”ghoose flesh”

5. NAILS:

- ❖ These are semi transparent, plate like horny structure, covering the dorsal surfaces of the distal phalanges of the fingers and toes.
- ❖ Nail parts are
    - ✓ Root
    - ✓ Nail plate
    - ✓ Nail bed
    - ✓ Lunula
    - ✓ Lateral and posterior nail fold

BLOOD VESSELS OF SKIN:

- ❖ The blood supply of the skin originates from the large number of arteries forming anastomosis in the deepest part of the dermis. From the single vessels run upwards and form a second network in the upper dermis.
- ❖ Finally terminal arterioles ascend in to the papillae ending in capillary loops, which drain into connective venules.
- ❖ The blood is returned to the large veins in the subcutaneous tissues.

LYMPHATICS OF THE SKIN:

- ❖ The skin contains a rich network of lymphatics which drains in to a larger vessel in the hypodermis.

NERVE SUPPLY OF SKIN:

- ❖ The nerve supply of the skin consists of a motor sympathetic portion derived from the sympathetic ganglia.
- ❖ Sensory spinal portion arising from the dorsal root ganglia.

PHYSIOLOGY OF SKIN:

The skin performs a multiple of functions, though the primary function of skin is the protection of organs, it has many other important functions.

These are :

1. Protective function.
2. Sensory function.
3. Storage function.
4. Synthetic function.
5. Regulation of body temperature.
6. Regulation of water and electrolyte balance.
7. Excretory function.
8. Absorptive function.
9. Secretory function.
10. Gaseous exchange.

1. PROTECTIVE FUNCTION:

Skin forms the covering of all organs of the body and protects these organs from the following factors:

i. Bacteria and toxic substances
ii. Mechanical flow
iii. Ultraviolet rays.

2. SENSORY FUNCTION:

Skin is considered as the largest sense organs in the body. It has many nerve endings, which form the specialized cutaneous receptors. These receptors are stimulated by the sensations of touch, pain, pressure or temperature sensation and convey these sensations to the brain via afferent nerves.

3. STORAGE FUNCTION:

Skin stores fat, waters, chlorides and sugar. It can also store blood by the dilatation of the cutaneous blood vessels.

4. SYNTHETIC FUNCTION:

Vitamin D3 is synthesized in skin by the action of ultraviolet rays on cholesterol.

5. REGULATION OF BODY TEMPERATURE:

Skin plays an important role in the regulation of body temperature. Excess heat is lost from body through skin by radiation, conduction and evaporation. ‘

6. REGULATION OF WATER AND ELECTROLYTE BALANCE:

Skin regulates water balance and electrolyte balance by excreting water and salts through sweat.

7. EXCRETORY FUNCTION:

Skin can excrete small quantities of waste materials like urea, salts and fatty substances.

8. ABSORPTIVE FUNCTION:

Skin can absorb the fat soluble substances and some ointments.

9. SECRETORY FUNCTION:

Skin regulates sweat through sweat glands and sebum through sebaceous glands. Sebum keeps the skin smooth and moist.

10. GASEOUS EXCHANGE:

A small amount of gaseous exchange through the skin.

EMBRYOLOGY OF THE SKIN:

The whole of the skin epidermis and dermis is a unified integrated organ system, but it develops from two different primitive embryonic layers epidermis from the ectoderm and dermis from the mesoderm.

PSORIASIS

DEFINITION:

It is a common chronic and non-infectious skin disorder, characterized by dry erythematous plaques, well defined slightly raised covered by a white silvery scales typical in extensor distribution ,it affects all over the body.

EPIDEMIOLOGY:

1. PREVALANCE:

- It is distribution in world wide.
- Fairly common in the tropical countries.
- It is pandemic in temperate climate.
- Attacks are more common in winter than summer.
- Natural tendency to clear up with the warm weather.
- A fair number of attacks develop in the monsoon.
- It affects 0.6%-4.8% of people worldwide.
- 150,000-260,000 new cases of psoriasis are diagnosed each year.
- About 400 people die from complications caused by psoriasis every year.
- About 11% patients have psoriatic arthritis.
- Plaque type is most common in 80% of psoriasis patients.

2. AGE OF ONSET:

- First peak of onset between 4-16 yrs.
- Early onset family history present.
- Late onset family history is not present.

3. SEX:

- Men and women are equally affected.

4. SEASON:

- Most patients worse in winters.

AETIOLOGY:

1. The exact cause is unknown - Autoimmune Disease
2. Stress.
3. Disturbed fat metabolism.
4. Hormonal imbalance.
5. Septic focus.
6. Allergy.
7. Anxiety states.
8. Lowered response of the cyclic AMP system to prostaglandin E1 in epidermis.
9. Mental trauma.
10. Fever.
11. Digestive upsets.
12. Physical injury:
    - ✓ Scratches.
    - ✓ Surgical incisions and injuries.

13. Infection:

- ✓ β - Hemolytic streptococcal infection- precipitates guttate lesions.
- ✓ HIV infection-Explosive psoriasis.

14. Herido familial and Genetic factors:

- ✓ Increased in familial cases.
- ✓ Greater concordance in monozygotic twins (70%)
- ✓ Dizygotic twins (30%)
- ✓ Increased association of HLA- CW6 20 times increased risk with early onset of psoriasis.

PRECIPITATING FACTORS:

- ❖ Diabetic's mellitus.
- ❖ Psychological stress.
- ❖ Hot water bathing
- ❖ Skin dryness.
- ❖ Obesity.

- Local Pressure.
- HIV
- Trauma.
- Purines in the diet.
- Identical twins.
- Immune system reacting to skin cells.
- Microbes.

  Staphylococcal aureus

  Candida albicans.
- **Drugs:**

  Anti malarial drugs.

  Lithium.

  Beta adrenergic blockers drugs.

  NSAID drugs.

  Corticosteroid withdrawal may aggravate psoriasis.(Pustular psoriasis)

Natural History of the Disease and Triggers:

The goal of control versus cure is a more practical outcome of treatment. Many randomized controlled clinical trials involving children under the age of 12 years have reported on two topical treatments: calcipotriol and corticosteroids. Avoidance of triggers like trauma (Koebner phenomenon), including physical, surgical, or inflammatory trauma, should be borne in mind in this age group. A strong association between pharyngitis by group A beta-hemolytic streptococci and the clinical activity of psoriasis (guttate psoriasis) is now well established and should be properly investigated where relevant.

Poriasis in paediatric Population

Although pediatric psoriasis is not uncommon, there are limited epidemiological data available to date.Prevalence rates vary according to the following: age, sex, geographical location. One-third of patients develop psoriasis in childhood, and the incidence of childhood psoriasis increases with age. In children it exhibits more pruritic, common in girls, and the lesions are relatively thinner, softer, and less scaly.

Scalp Psoriasis

- Often, the first place for these patches to occur in children is on the scalp.
- Facial involvement in children is a frequent observation in majority of the reports, which varies from 18 to 46%, whereas mucosal involvement has been rare in Indian children.

Guttate Psoriasis

- Another common type of psoriasis to affect children is called guttate psoriasis.
- This type is associated with several small, raindrop-like patches forming in large groups. When guttate psoriasis occurs in children and young teenagers, it is often the result of a secondary infection in the throat, such as strep throat.
- Other upper respiratory infections are also common triggers for psoriasis to start. Though not always the case, guttate psoriasis may go away within a few months and not return.

Flexural Psoriasis

Children will often develop flexural psoriasis. This term refers to the large, red patches of psoriasis that occurs around folds in the skin, such as at the joints.

Plaque Type Psoriasis

Plaque type is the most common form of disease, but certain clinical variants are rare in children like erythroderma, arthropathy, and localized and generalized pustular psoriasis.

Palmoplantar type Psoriasis

Palmoplantar psoriasis comprises approximately 4% of all psoriasis in children. Presentation varies from thick scaling with fissuring to a glazed erythema.This type of psoriasis is very common among Indian children which can be explained by the practices of walking barefoot and increased incidence of injuries.

PATHOGENESIS OF PSORIASIS:

Psoriasis appears to be largely a disorder of keratinization

↓

The basic defect is rapid replacement of epidermis in psoriatic lesion.

3 to 4days instead of 28 days in normal skin.

↓

There are marked vascular changes in upper dermis

Recently the presence of abnormal neural cells has been demonstrated in Psoriatic plaques.

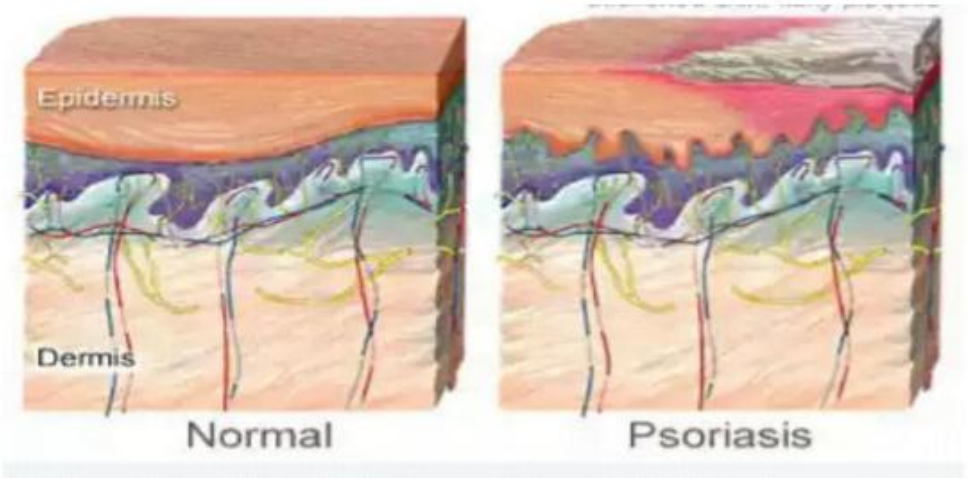


Fig. 3.2

PATHOGENESIS OF PSORIASIS

- Psoriasis was long considered either a disorder of keratinocytes growth or a chronic inflammation.
- Advancement in immunologic techniques and in genetic analyses has resulted in a reappraisal of the pathophysiology involved.
- Psoriasis consider as an organ specific autoimmune disease that is triggered by an activated cellular immune system and it similar to other immune mediated disease.
- The definition of autoimmune disease as " a clinical syndrome caused by the activation of T cells and Bcells, or both, in the absence of an ongoing infection or other discernable cause"

- Pathogenesis of psoriasis still poses a challenge to the scientific community to once and for all, establish how and why it occurs and consequently to develop the magic drug to treat it.
- Psoriasis is an immunological disease, characterized by interplay of

I. Immunological factors.
II. Cellular components.
III. Signaling molecules.
IV. Biochemical changes.
V. Histological changes.

These plays major role in pathogenesis.

I. IMMUNOLOGICAL FACTORS IN PSORIASIS:

Both innate or acquired immune changes are though to be responsible for the Development of psoriatic plaques

↓

Different types of helper T subsets, dendritic cells, plasmacytoid dendritic cells as well as Langherhans cells have been found to play a role in psoriasis.

↓

T cells plays important role in psoriasis

↓

Autoimmunity as a major factor in pathogenesis.

↓

The presence of T cells in the inflammatory infiltrate in psoriatic plaque obviously indicates the immune mediated or an autoimmune basis for the Pathogenesis of psoriasis.

II. CELLULAR COMPONENTS IN PATHOGENESIS OF PSORIASIS:

Cellular components are :

a) T cells
b) Keratinocytes
c) Langherhans

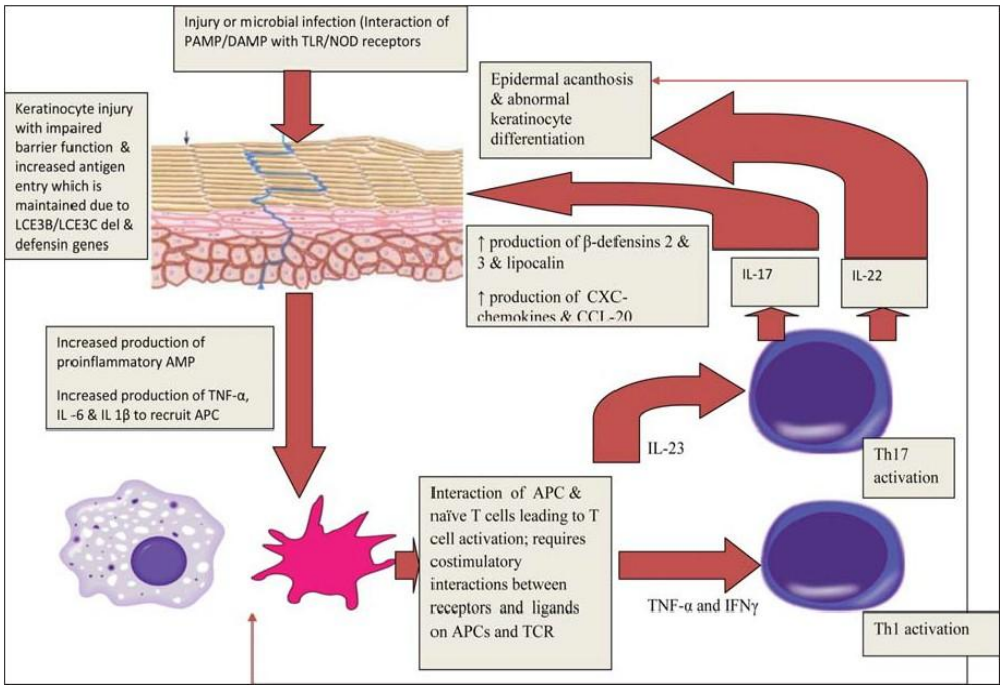


Fig. 3.3

CELLULAR COMPONENTS OF PSORIASIS

A. T CELLS:

- T cells play a key role, with the epidermal T cells being CD8+ & Dermal cells being CD4+.
- These cells include memory T cells, natural killer cells T cells& Th17& Th22.
- Th17& Th22 cells which are subsets of CD4+ cells are now considered important in pathogenesis of the psoriatic plaque.
- They are stimulated by IL-23 & respectively produce IL-17& IL-22 which mediate dermal inflammation and epidermal hyperplasia.

B. KERATINOCYTES:

- Keratinocytes cells express transcription factor STAT- 3, which may be pathogenic.

C. LANGERHANS CELLS:

- Langherhans cells secrete cytokines, which are mitogenic and chemotatic.

III. SIGNALLING MOLECULES IN PATHOGENESIS OF PSORIASIS:

- Include cytokines growth factors like interleukins, Chemokines, Interferon‟ s and their respective receptors.
- Characterized by up regulation of Th1 cytokines and reduction of anti inflammatory cytokines IL-10.
- Other important molecules include TNF-α, IL-15, IL-17, IL-22 and IL-23

IV. BIOCHEMICAL CHANGES IN PATHOGENESIS OF PSORIASIS:

- Cyclic nucleotide increased levels in cGMP or decreased levels of cAMP.
- Arachidonic acid level is increased and it metabolites are also increased
- Polyamines are also increased in levels.
- PROTEINASE: increased in levels of plasminogen activator and their inhibitors.
- Calmodulin is also increased in levels.

V. HISTOLOGICAL CHANGES IN PATHOGENESIS OF PSORIASIS:

- Epidermal changes increass epidermal proliferation in two ways
- One is increased growth fraction from normal of 30 to 100% in psoriasis.
- 2nd is shortened epidermal turn over time from normal of 60 to10 days in psoriasis.
- Important changes seen in dermal layer.
- Include dilated and tortuous capillary loops and proliferation of fibroblasts.

MOST COMMON SITES:

1. AREAS COMMONLY AFFECTED:

- Scalp
- Back of elbows
- Front of knees and legs
- Lower part of the back of the trunk
- Sole
- Palm

2. MAY ALSO BE AFFECTED:

- Nail

3. RARELY AFFECTED:

- Mucus membrane

CLINICAL FEATURS OF PSORIASIS:

- Typical distribution is extensor
- Lesions are bilaterally symmetrical
- Typical coin shaped lesion
- Big plaques of the size of palm of the hand
- The lesions are slightly raised above the surface of skin
- Absence of itching
- But itching present in tropical countries
- Slight or moderate purities present
- Secondary psychogenic stress present
- Secondary lichenification present
- Scalp is involved almost all cases
- No matting of hair
- Nail is also involved with 3types of lesion

  I. Pitting

  II. Seperation of nail from the nail bed and walls

  III. Thickening of the nail and collection of hyperkeratotic debris under the nail.

- The palms of the hands and soles of the feet also involved in patches of hyperkeratosis and fissures on erythematous bases.

IMPORTANT SIGNS OF PSORIASIS:

1. Candle greeze sign.
2. Auspitz sign.
3. Koebner's phenomenon.

1. CANDLE GREEZE SIGN(Tache de bouge) :

Psoriatic lesion is scratched with the point of a dissecting forceps a candle greeze like scale can be repeatedly produced even from the non scaling lesions this is called candle greeze sign (Tache de bouge).

2. AUSPITZ SIGN:

The complete removal of scale produces pin point bleeding.

3.**KOBNER'S PHENOMENON**:

Psoriatic lesions may develop along the scratch lines in the active phase this is called Koebner's phenomenon.

SITES OF PREDILECATION OF PSORIASIS:

- Lesions are usually bilaterally Symmetrical.
- Favours pressure points at extensor surface of
    - ✓ Elbows
    - ✓ Knee
    - ✓ Scalp
    - ✓ Fore head
    - ✓ Nape of neck
    - ✓ Trunk
    - ✓ Buttocks
    - ✓ Lumbosacral region
    - ✓ Periumblical area
    - ✓ Palms and soles.
- Usually with lesions at other sites, but sometimes in isolation.
- Infrequent involvement of photo exposed sites, involvement of face uncommon and indicates refractory psoriasis
- Intertriginous involvement in flexural psoria

CLINICAL TYPES OF PSORIASIS:

CLASSIFICATION:

Psoriasis is classified based on its onset, evolution and morphology into

1. Chronic plaque psoriasis (psoriasis vulgaris)
2. Acute guttate psoriasis
3. Pustular psoriasis

1.CHRONIC PLAQUE PSORIASIS:

There are several variants of chronic plaque psoriasis

A) MORPHOLOGICAL VARIANTS:

a) Small plaque psoriasis

b) Rupioid psoriasis

c) Para psoriasis

B) VARIATION OF MORPHOLOGY DUE TO SITE:

a) Flexural psoriasis

b) Annular psoriasis

c) Scalp psoriasis (Corona psoriatica)

d) Penile psoriasis

e) Psoriasis of palms and soles (psoriasis inverses)

ASSOCIATIONS OF PSORIASIS:

In a patient with chronic psoriasis, always check for nails and joint involvement.

a) Psoriatic nails

b) Musculoskeletal system(Psoriasis arthopathica)

c) Metabolic syndrome.

1. CHRONIC PLAQUE PSORIASIS(CPP):

Chronic plaque psoriasis is the commonest form of psoriasis

MORPHOLOGY:

The prototype lesion of CPP is a mildly itchy papule which is

- Well demarcated
- Erythematous - Deep pink to red
- White silvery scales, but is profuse adherent in elephantine
- Indurated and raised.
- Size and number of lesions variable
- Koebner‟ s phenomenon +ve
- Auspitz sign +ve

A) MORPHOLOGICAL VARIANTS:

a) SMALL PLAQUE PSORIASIS (SPP):

- Smaller 1- 2cm lesions
- Resemble like guttate psoriasis
- SPP occurs in older patients
- It is scalier and has a more chronic course.

b) RUPINOID PSORIASIS:

- Lesions with heaped up scales so appear conical
- Scales are firmly adherent to the underlying skin look like
- Lesions are classically present in Reactive arthritis(Reiter‟ s syndrome)
- Characterized by HLA B27 +ve, Antecedent infection, Arthritis, Conjunctivitis, Keratodermablennorrhagicum.

c) PARAPSORIASIS:

- Para psoriasis is a group of rather infrequent, idiopathic and asymptomatic erythrodermic or scaly papule dermatoses.
- It is a non specific reaction pattern of the skin which may represent an intermediary stage of psoriasis.

B) VARIATION OF MORPHOLOGY DUE TO SITE:

a) FLEXURAL PSORIASIS:

- ✓ Commonly occurs in elderly females, because lesions are present in moist friction prone areas.
- ✓ Lesions are well defined and erythematous (Salmon pink)
- ✓ Occurs in flexur like the axilla, inframammary folds, vulva and gluteal cleft.

b) ANNULAR PSORIASIS:

- ✓ The central clearing of the circular lesions produces ringed lesion.

c) SCALP PSORIASIS:

- ✓ Lesions may occur along the scalp border is called corona psoriatica.
- ✓ Sharply defined, indurated, scaly plaques present.
- ✓ Scaling looks like Asbestos, especially on the occipit.

d) PENILE PSORIASIS:

- ✓ In uncircumcised males, scaling is absent on glans but lesions continue to be erythematous and well defined.
- ✓ In circumcised patients, the lesions on the glans are similar to psoriatic lesions.

e) PSORIASIS OF PALMS AND SOLES:

- ✓ Lesions are bilaterally symmetrical (Psoriasis inversus)
- ✓ Lesions are well defined, Symmentrical, erythematous, thick plaques with white silvery scales may be profuse or minimal.

2. ACUTE GUTTATE PSORIASIS:

- ✓ Occurs in children and adolescents
- ✓ May be precipitated by streptococcal tonsillitis
- ✓ Lesions appear in several crops of small, erythematous papules withminimal scaling
- ✓ Side of predilection is trunk.

3. PUSTULAR PSORIASIS:

- ✓ It occurs mostly in withdrawal of topical or systemic steroids

LOCALIZED:

Inchronicplaque psoriasis, when plaques are surrounded with pustules

- ✓ Pustules and crusts are seen on distal part of fingers and in nail bed

GENERALISED:

- ✓ Is a serious condition
- ✓ Constitutional symptoms like high fever, chills and tachypnea seen
- ✓ Is characterized by generalized fiery red Erythema followed by appearance of waves of tiny.
- ✓ Appearances of new pustules as the old ones are crusting.

ASSOCIATION OF PSORIASIS:

NAIL PSORIASIS:

- ✓ Nail changes due to
  - Nail matrix psoriasis
  - Nail bed psoriasis
- ✓ Nail matrix psoriasis: Manifests as pitting
- ✓ Nail bed psoriasis: Nail plate thickening, subungual hyperkeratosis, discoloration and dystrophy of nail plate, oncholysisand oil spots are specific for psoriasis.

A. MUSCULOSKELETAL SYSTEM (PSORIASIS ARTHOPATHICA):

- ❖ Dactylitis and enthesitis is typically seen there are also seen 5 clinical patterns
- ❖ seen these are
- ❖ Asymmentrical oligoarthritis
- ❖ Symmetrical rheumatoid arthritis
- ❖ Distal interphalangeal arthritis
- ❖ Arthritis mutilans
- ❖ Axial arthritis

B. METABOLIC SYNDROME:

In patients with psoriasis, there is an increased prevalence of

- ❖ Hypertension
- ❖ Diabetes mellitus (Insulin resistance)
- ❖ Obesity
- ❖ Dyslipidemia
- ❖ Coronary artery disease

COMPLICATIONS

Complications of psoriasis may include the following: Secondary infections, Psoriatic arthritis, possible increased risk of lymphoma, cardiovascular disease, ischemic heart disease, and Mitral valve prolapse. Among these, Psoriatic arthritis is a major complication.

(Ref: ard.bmj.com › Volume 64, Issue suppl2)

SEVERITY OF PSORIASIS:

- A PASI score is a tool used to measure the severity and extent of psoriasis (Psoriasis area and severity index), it takes few minutes and experience to calculate it accurately.
- A representative area of psoriasis is selected for each body region. The intensity of redness, thickness, scaling of the psoriasis is assessed as none(0) , mild(1), moderate(2), severe(3), very severe(4).
- The percentage area affected by psoriasis is evaluated in the four regions of the body. In each region the area expressed as nil(0), 1-9%(1), 13-29(2), 30-49%(3), 50-69%(4), 70-89%(5), 90-100%(6).
- Head and neck, upper limbs, trunk, lower limbs calculations for area, each of the body area scores is multiplied by the area affected.

DIFFERENTIAL DIAGNOSIS

Nummular eczema

Rounded, circular desquamative erythematous lesions covered with vesicles, crusts, and scales, very itchy. Patients have whether atopic or allergic diathesis. Epicutaneous allergy tests are frequently positive.

Pityriasis rubra pilaris

In typical cases follicular papules and infiltrating scales are observed as well as typical hyperkeratosis.

Lichen simplex chronic

This disease shows dry and itchy oval plaques and resembles psoriasis as a shape but not have silvery scales Auspitz and candle signs and shows violaceous tint.

Pityriasis alba

It shows a white plaque, like psoriasis but have not an erythema. It has been seen only face. Psoriasis usually affects more than one area of the body. Red skin covered with greasy-looking white or yellowish scales.

RULE OUT OTHER TEST FOR PSORIASIS:

- Metabolic syndrome, diabetes, hypertension and dyslipidemia
- Hypocalcaemia especially in pustular psoriasis
- Anaemia and hypoproteinemia in erythrodermic psoriasis.

DIAGNOSIS OF PSORIASIS

There are no laboratory tests which will positively identify psoriasis. The blood count, Urine analysis, ESR and other hematologic chemical and serologic studies are within normal limits in most cases of psoriasis.

The diagnosis of psoriasis is based upon:

1. The family history of psoriasis
2. The typical distribution of the lesions on the scalp, elbows, knees, the front of the legs, back and nails
3. Well-defined non-indurated dry erythematous areas with silvery layer-uponlayer scaling
4. The candle – grease sign (when a psoriatic lesion is scratched with the point of a dissecting forceps, a candle-grease-like scale can be repeatedly produced even from the non-scaling lesions. This is CG sign)
5. Auspitz sign (Complete removal of a scale produces pin-point bleeding)
6. Koebner's phenomenon (Psoriatic lesions may develop along the scratch lines in the active phase)
7. Little or no itching
8. History of previous attacks and seasonal variations of the disease.

DIET FOR PSORIASIS PATIENTS:

TO TAKE:

1. All green leafy vegetables.
2. Low consumption of animal fats and the quantity of food.
3. High protein diet
4. Salmon Fish
5. Carrot
6. Tomatoes
7. Grains.

TO AVOID:

1. Oil foods.
2. High fat diet
3. Alcohol
4. Junk foods
5. Red meat
6. Dairy products
7. Night shade vegetables
8. Citrus fruits
9. Gluten protein in diet
10. Condiments.

PROGNOSIS:

- A permanent cure is not yet known
- Individual attacks can, almost always controlled satisfactorly
- Disease is non infectious
- The disease does not leave scar
- Flexural, erythrodermic and pustular psoriasis take longer to heal than the typical variety
- The palmar and nail lesions are rather resistant to treatment.
- Patient suffer from the disease on and off throughout their lives.
- Complications in psoriasis are infrequent.

MANAGEMENT:

- The general health of the patient should be maintained.
- The patient's life should be regulated so that no undue stress affects either body (or) mind.
- A moderate, warm climate, frequent sunbaths before the onset of the winter, and visits to sulphur springs, all of which are useful in bringing down the relapse rate.

1.அமுக்கரா சூரணம்:

கண்டிடா யமுக்கரா சூரணத்தைக்
கருகவே பலம்பத்து நிறுத்துக்கொண்டு
வண்டிடாய் வடிகொண்டு சூரணமேசெய்து
வால்மிளகு குரோசாணி பறங்கிப்பட்டை
கண்டிடாய் கருஞ்சீர கம்கடுக்காய்சுக்கு
கடுகுரோ கணிவாலு ழுவையரத்தைதிப்பிலி
இண்டிடாய் வகைவகைக்குப் பலமேதூக்கு
இடித்தனை முன்மருந்திற் சமளாய்சேரே.
சமனாகச் சீனியொரு நாலீலொன்று
சாரித்து வெருகடிதான் அந்திசந்தி
அமனாக ஆவின்நெய் சேர்த்துக்கொள்ளு
அரையாப்பு மேகவெடி கிரந்திகுஷ்டம்
எமனான வாயுவொடு கடிவிஷங்களெல்லாம்
எலிகடியும் சிலவிஷங்கள் பூரான்செய்யான்
கமனான மேகமொடு வாயுபித்தம்
கழன்றுபோம் பத்தியந்தான் கண்டுகொள்ளே.

- **பிரம்மமுனி கருக்கடை சூத்திரம் 380**

1. அமுக்கரா (**Withania somnifera .Linn)**

Other Regional Names:

Eng : Winter cherry
Ma l: Amukkuram
Tel : Penneru-gadda

சுவை - (யாவும்) கைப்பு
வீரியம் - வெப்பம்
பிரிவு - கார்ப்பு

செய்கை:

வீக்கமுருக்கி
உறக்கமுண்டாக்கி
உடற்றேற்றி
உடல்வெப்பகற்றி

பொதுகுணம்:

கொஞ்சந் துவர்ப்பாங் கொடியகயம் சூலையரி
மிஞ்சுகரப் பான்பாண்டு வெப்பதப்பு–விஞ்சி
முசுவுறு தோடமும் மோகம்அன லுண்டாம்
அசுவகந் திக்கென் றறி.

- **அகத்தியர் குணவாகடம்**

Taxonomical classification

Kingdom	-	Plantae
Subkingdom	-	Tracheobionta
Division	-	Angiosperma
Class	-	Dicotyledons
Order	-	Tubiflorae
Family	-	Solanaceae
Genus	-	Withania
Species	-	somnifera

Botanical description:

This species is a short, tender perennial shrub growing 35–75 cm (14–30 in) tall. Tomentose branches extend radially from a central stem. Leaves are dull green, elliptic, usually up to 10–12 cm (4 to 5 in) long. The flowers are small, green and bell-shaped. The ripe fruit is orange-red.

Chemical constituents

- Alkaloids
  - Anaferine
  - Scopoletin
  - Somniferinine
- Steroidal lactones.
  - Tropine and Cuscohygrine.
  - withanolides
  - withaferin A

Pharmacological activity:

- ❖ Anti-inflammatory activity
- ❖ Immunomodulatory activity,
- ❖ Anti-stress/Adaptogenic Activity
- ❖ Antitumour Activity

2.பறங்கிப்பட்டை (Smilax china.Linn):

Other regional names:

Eng	:	China root
Mal	:	Pavu
Tel	:	Piranki- chekka

சுவை	:	இனிப்பு
தன்மை	:	தட்பம்
பிரிவு	:	இனிப்பு

செய்கை:

உடற்றேற்றி

மேகப்பிணிவிலக்கி

காமம் பெருக்கி

தூய்மையாக்கி

பொதுகுணம்:

"தாகம் பலவாத தாதுநட்டம் புண்பிளவை
மேகங் கிரந்தி வீழ்மூலக் - தேகமுடன்
குட்டை பகந்தமேற் கொள்வமனம் போம்பறங்கிப்
பட்டையினை யுச்சரித்துப் பார்"

-தேரையர் குணவாகடம்

Taxonomical classification:

Kingdom	-	Plantae
Clade	-	Angiosperms
Clade	-	Monocots
Oredr	-	Liliales
Family	-	Smilacaceae
Genus	-	Smilax
Species	-	china

Botanical description

Smilax china is a hard tendril climbing vine with sparsely prickled or unarmed stems and thick tuberous rhizomes. The petiole is 0.5-1.5 cm, narrowly winged for half to one third of its length. Leaves simple, alternate, elliptic and rounded at base, prominently nerved and measures 3-10 cm x 1.5-6 cm. The inflorescence is born in axil of young leaf, of one umbel of both sexes which 10-25 flowered, representing subglobose and base subglobose measuring 2-3 mm in diameter with many small bracteoles. The male flowers have sepals of yellowish green and measuring 3.5-4.5 x 1.5-2.5 mm. The stamens measure 3-4 mm. The filaments are filiform in shape. The female flowers have six staminodes. The fruits which are red berries measures 0.6-1.5 cm in diameter and minutely white powdery.

Chemical constituents:

Root contains fat, sugar, glucoside, colouring matter, saponin (Sarasasapogenin) gum and starch.

Pharmacological activity

Anti inflammatory,

Antioxidant

Antipsoriatic

3.வால்மிளகு (Piper cubeba.Linn)

Other regional names:

Eng	:	Tail - pepper
Mal	:	Val - milaka
Tel	:	Tokamiriyalu
சுவை	:	கார்ப்பு , விறுவிறுப்பு
தன்மை	:	வெப்பம்
பிரிவு	:	கார்ப்பு

செய்கை:

கோழையற்றி

வெப்பமுண்டாக்கி

அகட்டுவாயகற்றி

பொதுகுணம்:

வாதபித்த ஐயம் வயிற்று வலிதாகஞ்
சீதம் பலநோய் சிதையுங்காண் - போத
அதிதீ பனமாம் அணங்கரசே! நாளுந்
துதிவால் மிளகருந்த சொல்.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Subkingdom	-	Tracheobionta
Division	-	Magnoliophyta
Class	-	Dicotyledons
Subclass	-	Piperales
Family	-	Piperaceae
Genus	-	Piper
Species	-	cubeba

Botanical description

This is a perennial plant, with a climbing stem, round branches, about as thick as a goose-quill, ash-colored, and rooting at the joints. The leaves are from four to six and a half inches long by one and a half to two inches broad, ovate-oblong, acuminate, and very smooth. Flowers arranged in spikes at the end of the branches; fruit, a berry rather longer than that of black pepper.

Chemical constituents:

- Essential oil
  - Piperin
  - Monoterpenes (sabinene 50%, carene, α-thujene, 1,4-cineol and 1,8-cineol) and sesquiterpenes (copaene, α- and β-cubebene, δ-cadinene, caryophyllene, germacrene, cubebol).
  - Lignanecubebin (2%)
  - Hinokinin, clusin, dihydroclusin, dihydrocubebin

Pharmacological Activity

Anti- oxidant activity

Anti-inflammatory activities

4.குரோசாணி ஒமம் (Hyoscyamus niger.Linn)

Other regional names:

Eng : Black henbane , Hanbaneseeds

Mal : Kurasani(omum)

Tel : Kurasani oamamu

சுவை : கார்ப்பு , சிறுகைப்பு

தன்மை: வெப்பம்

பிரிவு : கார்ப்பு

செய்கை:

இசிவகற்றி

தாதுவெப்பகற்றி

துயரடக்கி

உறக்கமுண்டாக்கி

பொதுகுணம்:

வெகுமூத் திரம்வாதம் வீரியநட் டம்புண்
உகுபேதி யுட்கடுப்பி னோடே–மிகுகரப்பான்
தீராக் கபமிவைபோம் செய்யகு ரோசானியென்றால்
வாரா மயக்கமுறு மால்.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Subkingdom	-	Tracheobionta
Division	-	Magnollophyta
Class	-	Dicotyledons
Order	-	Solanales
Family	-	Solanaceae
Genus	-	Hyoscyamus
Species	-	niger

Botanical description

An erect, viscidly hairy, foetid annual or biennial, up to 5 ft. Leaves radical and cauline, coarsely dentate to pinnately lobed; flowers yellowish green, sessile or sub-sessile, in terminal scorpioidal cymes; pyxidium, 0.5 in diam.; seeds numerous, minute, oval or slightly kidney – shaped, c. 1.5 mm. Long, brown marked with fine but conspicuous reticulations.

Chemical constituents:

Hyoscyamine, Hyoscine, Scopolamine, Hyosciprin, Cholin, Fatty oil, Mucilage, Albumen and Potassium nitrate 2 p.c.

Pharmacological activity:

Anti-inflammatory activity

Anti-histaminic activity

5.கடுகுரோகிணி (Picrorhiza kurroa pennell)

Other regional names:

Eng	:	Picrorhiza
Mal	:	Katukurohini, katurohini
Tel	:	Katki

சுவை	-	கைப்பு , கார்ப்பு
வீரியம்	-	வெப்பம்
பிரிவு	-	கார்ப்பு

செய்கை:

பசீத்தீதூண்டி

குடற்புழுவகற்றி

முறைவெப்பகற்றி

பொதுகுணம்:

மாந்தஞ் சுரமையம் வாயுகரப் பானாமஞ்
சேர்ந்தமலக் கட்டுதிரிதோடம் - போந்தபொட்டுப்
புண்வயிறு நோயிவைபோம் பொற்கொடியே–பேதியுண்டாம்
திண்கடுகு ரோகிணிக்குத் தேர்.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Class	-	Dicotyledons
Subclass	-	Asteride
Order	-	Scrophulariales
Family	-	Scrophulariaceae
Genus	-	Picrorhiza
Species	-	kurroa

Botonical description

- Kutki is known as a picrorhiza in the scientific language.
- The Picrorhiza species is a small perennial herb.
- Stem is small, weak, creeping, erect at flowering, leafy, and slightly hairy.
- Roots are about 5–10 cm long.
- Rhizomes are jointed and zigzag, greyish-brown, cylindrical, irregularly curved with branching and rooting at the jointed nodes.
- Leaves are 5–10 cm long, almost radical, sharply serrate, turning black on drying

Chemical constituents

- Three vital bitter glycosides, namely: Picroside I, Picroside II and Kutkoside.
- Among them both Picroside and Kutkoside are C-9 monoterpenes.
- Iridoid glycosides having an epoxy moiety present in the cyclopentane ring.
- Besides, it also contains organic acids, resin, sugar and tannins along with cucurbitacin glycosides (highly oxygenated triterpenes), apocycynin androsin, D-mannitol, Kutkiol, Kutkisterol, Apocyanin, Phenol glucosides, Androsin, and Picein Iridoid glycosides, Kutkin, Picroside I, II, III, IV, V, Kutkoside, Picrorhizin

Pharmacological activity

- Immunomodulatory activity
- Anti asthmatic activity
- Digestive activity
- Anti inflammatory

- Hepato protectivity

(http://www.ijprbs.com/issuedocs/2013/8/IJPRBS%20285.)

6.கடுக்காய் (Terminalia chebula Retz)

Other regional names:

Eng	:	Ink nut , Chebulic myrobalan
Mal	:	Katukkai
Tel	:	Karak- kaya

சுவை	-	துவர்ப்பு, இனிப்பு, கார்ப்பு, புளிப்பு,கைப்பு
வீரியம்	-	வெப்பம்
பிரிவு	-	இனிப்பு

செய்கை:

தோற்றுயரடக்கி

பொதுகுணம்:

கடுக்காயுந் தாயுங் கருதிலொன்றென் றாலும்
கடுக்காய்த் தாய்க்கதிகங் காண்நீ - கடுக்காய்நோய்
ஓட்டியுடற்றேற்றும் உற்றவன்னையோசுவைகள்
ஊட்டுயுடற் றேற்றுமு வந்து.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Subkingdom	-	Tracheophyta
Division	-	Magnoliophyta
Class	-	Dicotyledons
Order	-	Myrtales
Family	-	Combretaceae
Genus	-	Terminalia
Species	-	chebula

Botanical description

The tree is tall about 50-80 feet in height. It has round crown and spreading branches. The bark is dark brown with some longitudinal cracks. Leaves are ovate and elliptical, with two large glands at the top of the petiole. The flowers are monoecious, dull white to yellow, with a strong unpleasant odour, borne in terminal spikes or short panicles. The flowers appear May-June, the fruits July-December. The fruit or drupe is about 1-2 inches in size. It has five lines or five ribs on the outer skin. Fruit is green when unripe and yellowish grey when ripe. Fruits were collected from January to April, fruit formation started from November to January.

Chemical constituents

The fruits of *T. chebula* is rich in tannins (about 32%-34%) and its content varies with geographical distribution. The tannins of *T. chebula* are of pyrogallol (hydrolysable) type. A group of researchers found 14 components of hydrolysable tannins (gallic acid, chebulagic acid, punicalagin, chebulanin, corilagin, neochebulinic acid, ellagic acid, chebulinic acid, 1,2,3,4,6-penta-O-galloyl-β-D-glucose, 1,6-di-o-galloyl-D-glucose, casuarinin, 3,4,6-tri-o-glloyl-D-glucose, terchebulin) from *T. chebula*fruits. Other constituents include phenolics such as chebulinic acid, ellagic acid and anthraquinones. Some of the other minor constituents were polyphenols such as corilagin, galloyl glucose, punicalagin, terflavin A, maslinic acid. Besides, fructose, amino acids, succinic acid, betasitosterol, resin and purgative principle of anthraquinone are also present.Flavonol, glycosides, triterpenoids, coumarin conjugated with gallic acids called chebulin as well as other phenolic compounds were also isolated. Twelve fatty acids were isolated from *T. chebula* of which palmitic acid, linoleic acid and oleic acid were main constituents. Triterpenoid glycosides such as chebulosides I and II, arjunin, arjunglucoside, 2α-hydroxyursolic acid and 2α-hydroxymicromiric acid also have been reported. The leaves were found to contain polyphenols such as punicalin, punicalagin, terflavins B, C, and D. The plant is found to contain phloroglucimol and pyrogallol, along with phenolic acids such as ferulic, p-coumaric, caffeic and vanillic acids. Oil extracted from kernels yielded palmitic, stearic, oleic, linoleic, behenic and arachidic acids.

Pharmacological activity

- Antioxidant and free radical scavenging activity
- Anticarcinogenic activity

- Antimutagenic, radioprotective and chemopreventive activity
- Anti-inflammatory and anti-arthritic activity
- Wound healing activity
- Immunomodulatory activity
- Anti-allergic activity
- Cytoprotective activity

(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3631759/)

7.கருஞ்சீரகம் (Nigella sativa .Linn)

Other regional names:

Eng	:	Black Cumin
Mal	:	Karichirakam
Tel	:	Nalla-jilakarra

சுவை	-	கைப்பு
வீரியம்	-	வெப்பம்
பிரிவு	-	கார்ப்பு

செய்கை:

பசீத்தீதூண்டி
வறட்சியகற்றி
புழுக்கொல்லி
தூக்குணிப்புழுக்கொல்லி

பொதுகுணம்:

கருஞ் சீரகத்தான் கரப்பனொடு புண்ணும்
வருஞ்சிராய்ப் பீநசமு மாற்றும் - அருந்தினால்
காய்ச்சல் தலைவலியுங் கண்வலியும் போமுலகில்
வாய்ச்ச மருந்தெனவே வை.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Subkingdom	-	Viridiplantae
Division	-	Tracheophyta
Class	-	Magnoliopsida
Order	-	Ranunculales
Family	-	Ranunculaceae
Genus	-	Nigella
Species	-	sativa

Botanical description

Nigella sativa, which is also known as black cumin and panacea. *N. sativa* is a member of the Ranunculaceae family; it is approximately 20–30 cm in height and has white, yellow, pink, light blue or red flowers. The fruit is a large and inflated capsule composed of three to seven united follicles, each containing numerous seeds.

Chemical constituents

The plant contains various compounds including nonvolatile oils, alkaloids, saponin, oleic and linoleic acids, thymoquinone (TQ), p-cymene, t-anethole, carvacrol, 4-terpineol, and longifoline. Other components include sterols, phospholipids, tannins, resins, hydroxyl ketones, polyphenols, tocopherols, and vitamins.TQ is an important pharmacologically active component and several effects of *N. sativa* are attributed to this ingredient. Pharmacological effects of *N. sativa* such as antioxidant, analgesic, anti-inflammatory, antimutation, anti-liver and anti-kidney toxicity, antidiabetic, antiulcer, and immunoprotective properties have also been reported in several studies.

(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4737945/)

PHARMACOLOGICAL ACTIVITY

- Antiinflammatory
- Analgesic
- Antipyretic
- Antimicrobial and Antineoplastic activity.

8.சுக்கு (Zingiber officianale , Rosc)

Other regional names:

Eng	:	Green ginger-fresh root of dry
Mal	:	Inji, chukka
Tel	:	Allama

சுவை	-	கார்ப்பு
வீரியம்	-	வெப்பம்
பிரிவு	-	கார்ப்பு

செய்கை:

பசீத்தீதூண்டி

செரிப்புண்டாக்கி

உமிழ்நீர்ப்பெருக்கி

பொதுகுணம்:

சூலைமந்தம் நெஞ்செரிப்பு தோடமேப் பம்மழலை
மூலம் இரைப்பிருமல் மூக்குநீர் - வாலகப
தோடமதி சாரந் தொடர்வாத குன்மநீர்த்
தோடம்ஆ மம்போக்குஞ் சுக்கு.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Clade	-	Angiosperms
Clade	-	Monocots
Order	-	Zingiberales
Family	-	Zingiberaceae
Genus	-	Zingiber
Species	-	officinale

Botanical description

The ginger plant, Zingiber officinale, has a biennial or perennial, creeping rhizome, and an annual stem, which rises two or three feet in height, is solid, cylindrical, erect, and enclosed in an imbricated membranous sheathing. The leaves are lanceolate, acute, smooth,

five or six inches long by about an inch in breadth, and stand alternately on the sheaths of the stem. The flower-stalk rises by the side of the stem from six inches to a foot, and, like it, is clothed with oval acuminate sheaths; but it is without leaves, and terminates in an oval, obtuse bracteal, imbricated spike. The flowers are of a dingy yellow color, and appear two or three at a time between the bracteal scales.

Chemical constituents

Numerous active ingredients are present in ginger including terpenes and oleoresin which called ginger oil. Ginger also constitutes volatile oils approximately 1% to 3% and non-volatile pungent components oleoresin . The major identified components from terpene are sesquiterpene hydrocarbons and phenolic compounds which are gingerol and shogaol and lipophilic rhizome extracts, yielded potentially active gingerols, which can be converted to shogaols, zingerone, and paradol .

Pharmacological activity

- Antioxidant activity
- Anti-inflammatory activity
- Anti-tumour activity
- Hepato-protective effect
- Anti-microbial activity

(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4106649/)

9.வாலுளுவை (Celastrus paniculatus. Wild)

Other regional names:

Eng	:	Climbing staff plant
Mal	:	Cherrupunnari
Tel	:	Mal- kanguni-vittulu
சுவை	-	கைப்பு
வீரியம்	-	வெப்பம்
பிரிவு	-	கார்ப்பு

செய்கை:

நாடியுரமாக்கி

வியர்வைபெருக்கி

உடற்றேற்றி

பொதுகுணம்:

வயிற்றுக் கடுப்புவலி மாறாக் கிராணி
பயித்தியங் காசமல பந்தஞ் - சயிக்கவொணாச்
சூதிகா வாதமும் போந் தொல்வா லுளுவைவிதைக்
குாதிநவ சித்தர் மொழியாம்.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom	-	Plantae
Subkingdom	-	Tracheobionta
Division	-	Magnliophyta
Class	-	Magnoliopsida
Order	-	Celastrales
Family	-	Celestraceae
Genus	-	Celastrus
Species	-	paniculatus

Botonical description

The base stem of this shrub grows up to 10 centimeters in diameter and 6 meters in length. Being a rambler by nature, it produces many woody branches that cling to surrounding flora for support. The stem has a rough, pale or reddish brown exfoliating bark covered densely with small elongated white lenticels. The inner bark is light and cork like with yellow sapwood. The leaves are simple, broad, and oval, obovate or elliptic in shape, leathery and smooth, alternately arranged on short petioles with toothed margins1 . They grow on singular stems ranging from light to dark green color. The flowers are tiny with 3.8 mm diameter, whitish green to yellow green in color and grow on the top of the main stalk in terminal drooping panicles of 5-20 cm length. Capsules of the plant are depressed, globose, tri-lobed, bright yellow colored with 1-1.3 cm diameter, containing 3-6 seeds per capsule/ seed pod which are enclosed by an orange-red aril. The seeds are small and oval shaped growing in round pods that gradually change from a light yellow to a deep red color as they mature

Chemical constituents

- Leaves

  Saponin
- Root bark

β-sitosterol, Celastrol, Pristimerin, Zeylasterone, Zeylasteral; Terpenes

- ❖ Seed / Seed oil

Acetic and benzoic acids in addition to other fatty acids; crystalline substance tetracasanol and sterol14, 15; Alkaloids Celastrine and Paniculatin.

Pharmacological activity

- Analgesic and Anti-inflammatory
- Antioxidant
- Hypolipidaemic
- Wound healing activity
- Anti-bacterial activity
- Anti-fungal activity

(http://www.ijpbs.net/vol-3/issue-3/pharma/33.)

10.அரத்தை (Alpinia officinarum.Linn)

Other regional names:

Eng	:	Galangal the lesser
Mal	:	Aratha
Tel	:	sanna-rashtramu

சுவை	-	கார்ப்பு
வீரியம்	-	வெப்பம்
பிரிவு	-	கார்ப்பு

செய்கை:

வெப்பகற்றி

கோழையகற்றி

பசீத்தீதூண்டி

பொதுகுணம்:

தொண்டையிற்கட் டுங்கபத்தைத் தூரத் துரத்திவிடும்
பண்டைச்சீ தத்தைப் பறக்கடிக்கும் - கெண்டைவிழி
மின்னை! கரப்பனைவே றாக்கும் பசிகொடுக்கும்
சொன்னோம் அரத்தைச் சுகம்.

-அகத்தியர் குணவாகடம்

Taxonomical classification:

Kingdom - Plantae
Division - Angiosperms
Class - Monocots
Order - Zingiberales
Family - Zingiberaceae
Genus - Alpinia
Species - officinarum

Botonical description

The plant is a rhizomatous, perennial herb, and attains a height of about 1.5–2.5 m. The rhizome is very prominent and aromatic. Externally, it is reddish brown-white and internally reddish-white. Leaves are leathery, about 30–60 cm long and 10–15 cm, glossy on both surfaces, lanceolate and smooth, with white margins.

Chemical constituents

- Benzylacetone (26.77%), 1,7-diphenyl-5-hydroxy-3-heptanone (17.78%), Guaiacylacetone (10.03%) and Benzenepropanal (7.42%). The essential oil of *A. officinarum* rhizomes (LD_{50} = 20.71 μg/adult).
- 1-phenyl-4-(16,17-dimethyl-9,13-octadiene)-5-isopentenyl-7-(4"-methoxyl-3"-hydroxyl-phenyl)-3-heptanone.
- 5-hydroxy-1,7-diphenyl-3-heptanone, 1, 7-diphenyl-4-hepten-3-one, galangin-3-methyl ether and pinocembrin.

(https://www.ncbi.nlm.nih.gov/pubmed/28420198)

Pharmacological Activity

Anti-inflammatory, Antioxidant, and Anticancer properties.

(www.phcogrev.com/article.asp?issn=0973-7847;year=2017;volume=11)

11.திப்பிலி (Piper longum)

Other regional names:

Eng : Long pepper

Mal : Thippili

Tel : Pippilu

சுவை : இனிப்பு

தன்மை: வெப்பம்

பிரிவு : இனிப்பு

செய்கை:

வெப்பமுண்டாக்கி

அகட்டுவாயகற்றி

பொதுகுணம்:

திப்பிலியின் றண்டுலஞ் சிலேத்மத்தைப் போக்கிவிடும்
உப்பிசத்தை மேகத்தை ஓட்டுங்காண் - தப்பாமல்
வாத சுரந்தணிக்கும் மாகபரோ கந்தொலைக்கும்
தாதுவை வளர்ப்பிக்குஞ் சாற்று.

-அகத்தியர் குணவாகடம்

Taxonomical classification

Kingdom - Plantae

Division - Magnoliophyta

Class - Magnoliopsida

Order - Piperales

Family - Piperaceae

Genus - Piper

Species - longum

Botanical description:

It is a slender, aromatic, perennial climber, with woody roots and numerous wide ovate, cordate leaves. The inflorescence is a cylindrical, pedunculate spike, the female flower is up to 2.5 cm long and 4-5 mm in diameter but the male flower is larger and slender. The fruits are small, ovoid berries, shiny blackish green, embedded in fleshy spikes

Chemical constitution:

Piper longum contain piperine as the major and active constituent, Thepiperine content is 3- 5% (on dry weight basis) in Piper longum. The fruits gave positive result for presence of starch, protein and alkaloids, volatile oils, saponins, carbohydrates, and amygdalin and negative result for tannins.

Methyl piperine, pipernonaline, piperettine, asarinine, pellitorine, piperundecalidine, piperlongumine, piperlonguminine, retrofractamide A, pergumidiene, brachystamide-B, a dimer of desmethoxypiplartine, N-isobutyl decadienamide, brachyamide-A, brachystine, pipercide, piperderidine, longamide, dehydropipernonalinepiperidine, and tetrahydropiperine. Piperine, piperlongumine, tetrahydropiperlongumine, trimethoxycinnamoyl-piperidine, and piperlonguminine have been found in the root.

Pharmacological activity:

- Anti-inflammatory activity
- Immunomodulatory activity
- Antioxidant activity

12.இண்டு (Acacia pennata,Lam.)

Other regional names:

Eng : straggling prickly shrub; Eight pinnate soap pod

சுவை - கார்ப்பு

வீரியம் - வெப்பம்

பிரிவு - கார்ப்பு

செய்கை:

கோழையகற்றி

வெப்பமுண்டாக்கி

பொதுகுணம்

பீநசத்தைப் போக்கும் பெருகியதோர் நீரேற்றம்

தானசிக்கச் செய்யுமிது சத்தியங்காண் - வானசைக்கும்

மண்டைக் குடைச்சல் மருவுமுக சன்னியும் போம்

பண்டையுற்ற இண்டினுக்குப் பார்.

-அகத்தியர் குணவாகடம்

Taxonamical classification

Kingdom - plantea
Clade - Angiosperms
Clade - Eudicots
Order - Fabales
Family - Mimosaceae
Genus - Accacia
Species - pennata

Botonical description:

Acacia pennata is a scandent shrub with scattered numerous prickles.
Leaves are bipinnately compound. Pinnas are in 8 to 20 pair and leaflets are more than 30 pair. Petiole is 2 cm long, with a plate shaped gland near the middle or the base. Rachis is grooved, obscurely prickled, with glands opposite to two uppermost pairs of pinnae.

Chemical constititions:

The leaves of plant contain Octadecadienoic, octadecanoic, palmitic and pentadecanoic acids; lupeol, a-spinasterol, beta- sitosterol and tannins.
The bark contains tannin 9%, lupeol and alpha-spinasterol.
Stem yields sitosterol.

Pharmacological activity:

- Anti-inflammatory activity
- Antinociceptive activity

(https://www.ncbi.nlm.nih.gov/pubmed/15763384)

13.சீனிக்கற்கண்டு (Saccharum officinarum , Linn)

Other regional names:

Eng : sugarcane , noble cane
Mal : karinba
Tel : cherukku Kanupula-cherukku

சுவை - இனிப்பு
வீரியம் - சீதம்
பிரிவு - இனிப்பு

செய்கை:

அழுகலகற்றி

உள்ளழலாற்றி

பொதுகுணம்

ஈறின் தடிப்பு மிருமலும்பல் வாந்திகளுஞ்
சீறுகப முட்டினமுஞ் சேராதே - தேறியநற்
சொற்கண் டிளங்குயில்கள் சூழ மடவனமே!
கற்கண் டெனவுரைக்குங் கால்.

-அகத்தியர் குணவாகடம்

Taxonomical cassification

Kingdom	-	Plantae
Subkingdom	-	Viridiplantae
Division	-	Tracheophyta
Order	-	Poales
Family	-	Poaceae
Genus	-	Saccharum
Species	-	officinarum

Botanical description

Saccharum officinarum is a perennial plant that grows in clumps consisting of a number of strong unbranched stems. A network of rhizomes forms under the soil, which sends up secondary shoots near the parent plant. The stems vary in color being green, pinkish or purple and can reach 5 cm (16 ft) in height. They are jointed, nodes being present at the bases of the alternate leaves. The internodes contain a fibrous white pith, immersed in sugary sap. The elongated, linear, green leaves have thick midribs and saw-toothed edges that grow to a length of about 30 to 60 cm (12 to 24 ins) and width of 5 cm (2.0 ins). The terminal inflorescence is a panicle up to 60 cm (24 ins) long, a pinkish plume that is broadest at the base and tapering toward the top. The spikelets are borne on side branches and are about 3 mm (0.12 ins) long and are concealed in tufts of long, silky hair. The fruits are dry and each one contains a single seed.Sugarcane harvesting typically occurs before the plant flowers, as the flowering process causes a reduction in sugar content

Chemical costituents

Phytochemicals including phenolic compounds, plant sterols, and policosanols.

Pharmacological activity

- Anti-inflammatory effect
- Antithrombotic activity
- Antihepatotoxic activity
- Analgesic activity

(https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4441162/)

14. வெட்டிவேர் (Vetiveria zizanioides .Linn)

Other regional names:

Eng	:	Cuscus grass, vetiver , Khas- khas, khus-khus
Mal	:	vettiveru
Tel	:	vatti very
		Avvuru-goddi-veru

சுவை - இனிப்பு

வீரியம் - சீதம்

பிரிவு - இனிப்பு

செய்கை:

உரமாக்கி

இசிவகற்றி

வெப்பகற்றி

பொதுகுணம்

பித்தவி தாகம் சசிகா மிலங்கறைப் பித்தமனற்
றத்திடு குட்டஞ் சிரநோய் களமடி தாதுநட்ட
மத்தம னற்புண் டனப்புண்வன் மூர்ச்சைவரிவிழிநோய்
வித்திர மேகத்தின் கட்டியும் போம் வெட்டி வேரினுக்கே.

-அகத்தியர் குணவாகடம்

Taxonomical classifications:

Kingdom	-	Plantae
Subkingdom	-	Viridiplantae
Division	-	Manoliophyta
Class	-	Monocotyledons
Order	-	Cyperales
Family	-	Poaceae
Genus	-	Vetiveria
Species	-	ziznioides

Botanical description:

Vetiver grows to 150 centimetres (5 ft) high and form clumps as wide. Under favorable conditions, the erect culms can reach 3m in height.The stems are tall and the leaves are long, thin, and rather rigid. The flowers are brownish-purple. Unlike most grasses, which form horizontally spreading, mat-like root systems, vetiver's roots grow downward, 2 metres (7 ft) to 4 metres (13 ft) in depth.

The root system of vetiver is finely structured and very strong. It can grow 3 metres (10 ft) to 4 metres (13 ft) deep within the first year. Vetiver has neither stolons nor rhizomes. Because of all these characteristics, the vetiver plant is highly drought-tolerant and can help to protect soil against sheet erosion. In case of sediment deposition, new roots can grow out of buried nodes.

Chemical constituents:

Vetiver oil or *khus* oil is complex oil, containing over 100 identified components, typically

benzoic acid	furfurol
vetivene	vetivenyl vetivenate
terpinen-4-ol	5-epiprezizane
khusimene	α-muurolene
khusimone	Calacorene
β-humulene	α-longipinene
γ-selinene	δ-selinene
δ-cadinene	valencene
calarene,-gurjunene	α-amorphene

epizizanal	3-epizizanol
khusimol	Iso-khusimol
valerenol	β-vetivone
α-vetivone	vetivazulene

Pharmacological activity

Antioxidant Activity

Antibacterial Activity

Antidepressant Activity

Hepatoprotective Activity

15. அதிமதுரம் (Glycyrrhiza glabra.Linn)

Other regional names:

Eng	:	Jequitity ; Indian or Jamaica liquorice
Mal	:	Ati-madhuram , Iratti-Madhuram
Tel	:	Ati- madhukam
		Yasti-Madhukam

சுவை	-	இனிப்பு
வீரியம்	-	சீதம்
பிரிவு	-	இனிப்பு

செய்கை:

வறட்சியகற்றி

கோழையகற்றி

உள்ளழலாற்றி

உரமாக்கி

மலமிளக்கி

பொதுகுணம்:

கத்தியரி முப்பிணியால் வருபுண் தாகங்
கண்ணோய்உன் மாதம்விக்கல் வலிவெண் குட்டம்
பித்தமெலும் புருக்கி கிரிச்சரம் ஆவர்த்த
பித்தமத மூர்ச்சைவிட பாகம் வெப்பந்

தத்திவரு வாதசோ ணிதங்கா மாலை
சருவவிடங் காமியநோய் தாது நட்டங்
குத்திருமல் ஆசியங்கம் இதழ்நோய் இந்து
குயப்புணும்போம் மதூகமெனக் கூறுங் காலே.

-அகத்தியர் குணவாகடம்

Taxonomic classification:

Kingdom	-	Plantae
Clade	-	Angiosperms
Clade	-	Eudicots
Order	-	Fabales
Family	-	Fabaceae
Genus	-	Glycyrrhiza
Species	-	glabra

Botanical description:

It is a herbaceous perennial, growing to 1 m in height, with pinnate leaves about 7–15 cm (2.8–5.9 in) long, with 9–17 leaflets. The flowers are 0.8–1.2 cm (⅓–½ in) long, purple to pale whitish blue, produced in a loose inflorescence. The fruit is an oblong pod, 2–3 cm (¾–1 ⅙ in) long, containing several seeds.The roots are stoloniferous

The licorice plant is erect, standing about 1.5 meters tall with spikes bearing lilac-colored flowers with bean-like pods containing three or four seeds

The main root (taproot) descends up to a meter into the ground and sends out a network of rhizomes. These roots and rhizomes are harvested after three to five years.

The rhizomes have a woody appearance with a brown skin and yellow, fibrous interior.

Chemical constituents

The roots of Glycyrrhiza glabra Linn.contain glycyrrhizin, which is a saponin that is 60 times sweeter than cane sugar; Flavonoid rich fractions include liquirtin, isoliquertin liquiritigenin and rhamnoliquirilin and five new flavonoids- glucoliquiritin apioside, prenyllicoflavone A, shinflavanone, shinpterocarpin and 1-metho-xyphaseolin isolated from dried roots [13]. Isolation and structure determination of licopyranocoumarin,

licoarylcoumarin, glisoflavone and new coumarin-GU-12 also isolated. Four new isoprenoid-substituted phenolic constituents – semilicoisoflavone B, 1-methoxyficifolinol, isoangustone A, and licoriphenone isolated from roots.

A new prenylated isoflavan derivative, kanzonol R was also isolated . The presence of many volatile components such as pentanol, hexanol, linalool oxide A and B, tetramethyl pyrazine, terpinen-4-ol, α-terpineol, geraniol and others in the roots is reported. Presence of propionic acid, benzoic acid, ethyl linoleate, methyl ethyl ketine, 2, 3-butanediol, furfuraldehyde, furfuryl formate, 1-methyl-2-formylpyrrole, trimethylpyrazie, maltol and any other compounds is also isolated from the essential oil .

The Indian roots show various 2-methyliso - flavones, and an unusual coumarin, C liquocoumarin, 6 - acetyl- 5, hydroxy- 4 - methyl coumarin. Asparagine is also found. Glycyrrhizin (glycyrrhizic acid; glycyrrhizinate) constitutes 10–25% of licorice root extract and is considered the primary active ingredient. Glycyrrhizin is a saponin compound comprised of a triterpenoid aglycone, glycyrrhetic acid (glycyrrhetinic acid; enoxolone) conjugated to a disaccharide of glucuronic acid.

Both glycyrrhizin and glycyrrhetic acid can exist in the 18α and 18β stereoisomers. As a tribasic acid, glycyrrhizin can form a variety of salts and occurs naturally in licorice root as the calcium and potassium salt

Pharmacological activity

Antitussive, expectorant,Antibacterial, Antioxidant, Antimalarial, Antispasmodic, Anti-inflammatory and Anti-hyper glycemic properties.

16. தேவதாரம் (Cedrus deodara.G.Don.)

Other regional names:

Eng : Himalayancedar,deodar

Mal : Thevatharam

Tel : Davadarù

சுவை - சிறுகைப்பு

வீரியம் - வெப்பம்

பிரிவு - கார்ப்பு

செய்கை:

அகட்டுவாயகற்றி

பொதுகுணம்:

தேவதா ரக்குணந்தான் சேர்த்துவளர் பீனிசத்தைக்
காவகத்தி லோட்டுங் கரப்பலவே–மாவலவர்
சொல்லும்பு ராணசுரமொடுநீ ரேற்றத்தை
வெல்லு மனற்றணிக்கு மெய்.

-அகத்தியர் குணவாகடம்

Taxonomical classifications:

Kingdom	-	plantae
Division	-	Pinopyta
Class	-	Pinosida
Order	-	Pinales
Family	-	Pinacae
Genus	-	Cedurus
Species	-	deodra

Botanical description:

It is a large evergreen coniferous tree reaching 40–50 m (131–164 ft) tall, exceptionally 60 m (197 ft) with a trunk up to 3 m (10 ft) in diameter. It has a conic crown with level branches and drooping branchlets.

The leaves are needle-like, mostly 2.5–5 cm (0.98–1.97 in) long, occasionally up to 7 cm (2.8 in) long, slender (1 mm (0.039 in) thick), borne singly on long shoots, and in dense clusters of 20–30 on short shoots; they vary from bright green to glaucous blue-green in colour. The female cones are barrel-shaped, 7–13 cm (2.8–5.1 in) long and 5–9 cm (2.0–3.5 in) broad, and disintegrate when mature (in 12 months) to release the winged seeds. The male cones are 4–6 cm (1.6–2.4 in) long, and shed their pollenin autumn.

Chemical constituents:

The wood contains cedeodarin, ampelopsin, cedrin, cedrinoside, and deodarin (3′,4′,5,6-tetrahydroxy-8-methyl dihydroflavonol.

The main components of the needle essential oil include α terpineol (30.2%), linalool (24.47%), limonene (17.01%), anethole (14.57%), caryophyllene

(3.14%), and eugenol (2.14%). The deodar cedar also contains lignans and the phenolic sesquiterpene himasecolone, together with isopimaric acid. Other compounds have been identified, including (−)-matairesinol, (−)-nortrachelogenin, and a dibenzylbutyrolactollignan (4,4',9-trihydroxy-3,3'-dimethoxy-9,9'-epoxylignan).

Pharmacological activity:

- Analgesic
- Anti inflammatory activity
- Anxiolytic
- Anti convulsant activity of alcoholic extract
- Anti ulcer
- Anti fungal effect

17. நல்லெண்ணெய் (Sesamum indicum.Linn)

Other Regional Names:

Eng	:	Gingeli oil plant, gingelly , Sesame
Mal	:	Karuella
Tel	:	Nuvulu

சுவை - இனிப்பு
வீரியம் - வெப்பம்
பிரிவு - இனிப்பு

செய்கை:

வறட்சியகற்றி
உள்ளழலாற்றி

பொதுகுணம்:

புத்திநயனக்குளிர்ச்சி பூரிப்பு மெய்ப்புளகஞ்
சத்துவங் கந்தி தனியிளமை–மெத்தவுண்டாங்
கண்ணோய் செவிநோய் கபாலவழல் காசநோய்
புண்ணோய்போ மெண்ணெய்யாற் போற்று.

-அகத்தியர் குணவாகடம்

Taxonomicl classification

Kingdom	-	Plantae
Subkingdom	-	Viridiplantae
Division	-	Tracheophyta
Class	-	Magnoliopsida
Order	-	Lamiales
Family	-	Pedaliaceae
Genus	-	Sesamum
Species	-	indicum

Botanical description

The Sesamum indicum L., is a plant of the Pedaliaceae family and Sesamum genus, annual herb, high 80-180cm. Stems erect, 4-angled, angular, base slightly lignified, unbranched, pubescent. Leaves opposite, or upper ones alternate; petiole 1-7cm long; leaf blade ovate, oblong or lanceolate, 5-15cm long, 1-8cm wide, apex acute or acuminate, base cuneate, entire, Sawtooth or lower leaves 3 lobed, surface greenish, abaxially pale green, both surfaces glabrous or slightly white-fleshed. Flowers solitary, or 2-3 flowers born in leaf axils, 1-1.5 cm in diam.; calyx slightly connate, green, 5-lobed, lobes lanceolate, 5--10 cm long, pilose; corolla tube, lip-shaped, long 1.5-2.5cm, white, purple or yellow, halo, lobes rounded, lateral puberulous; stamens 4, inserted at base of corolla tube, anthers yellow, sagittate; pistil 1, carpel 2, ovary conic At the beginning, it was false in 4 rooms, and it was mature in 2 rooms. The style was linear and the stigma was split. Capsule elliptic, 2-2.5cm long, 4-sided or 6-8-sided, longitudinally fissile, early green, dark brown after maturity, pubescent. Most seeds are ovate, flat on both sides, black, white or light yellow. Flowering from May to September, fruiting period from July to September.

Chemical constituents

Proteins and fat oils

Momor-cerebroside , soya-cerebroside II , 1-O-beta-D-glucopyranosyl-(2S, 3S, 4R, 5E,9Z)-2-N-(2'-hydroxytetracosanoyl) 1,3,4-trihydroxy-5,9-octadienine , 1-O-beta-D-glucopyranosyl-(2S, 3S, 4R, 8Z)-2-N-(2' R) 2'-hydroxytetracosanoyl) 3,4-dihydroxy-8-octadene , (2S, 1" S) -aurantiamide acetate , benzyl alcohol-O-(2'-O-beta-D-xylopyranosyl,

3'-O-beta-D-glucopyranoside)-beta-D-glucopyranoside , beta-sitosterol , daucosterol and D-galacititol .

Pharmacological activity

- Antioxidant
- Wound healing activity
- Hepatoprotective activity
- Anticancer
- Antiaging and Anticoagulant activities.

FIGURES OF RAW DRUGS

Fig 3.4. Amukkara (withania somnifera)

Fig 3.5. Vaal milagu (Piper cubeba)

Fig 3.6 Kurosani omam (Hyosymus niger)

Fig 3.7 Parangipattai (Smilax china)

Fig 3.8 Kadugurohini (Picrorhiza kurroa)

Fig 3.9 Kadukkai (Terminalai chebula)

Fig 3.10 Karunseeragam(Nigella sativa)

Fig 3.11 Chukku(Zingeber officinalis)

Fig 3.12 Vaaluluvai (Celatrus paniculatus)

Fig 3.13 Arathai (Alpini officinarum)

Fig 3.14 Thippili (Piper longum)

Fig 3.15 Indu (Accacia penneta)

Fig 3.16 Seenikarkandu (Saccharum officinarum)

Fig 3.17 Vettiver (Vettiveria ziznioides)

Fig 3.18 Adhimadhuram(Glycyrrhiza glabra)

Fig 3.19 Devadharam(Cedrus deodara)

Fig 3.20 Nallennai (Sesamum indicum)

MATERIALS AND METHODS

Source of Raw Drugs

The required raw drugs for the trial medicine were purchased from a well reputed country raw drug shop and drugs were authenticated by the competent authority of department of Medicinal Botany, National Institute of Siddha. After that the raw drugs were purified separately then the trial drugs were prepared in Gunapadam laboratory of National Institute of Siddha.

PREPERATION OF TRIAL DRUGS

Internal Medicine: **AMUKKARA CHOORANAM**

(Ref : Brahmamuni Karukkadai Soothiram - 380)

INGREDIENTS :

1. Amukkara kizhangu chooranam (Withania somnifera) -10 Palam (350 Gram)
2. Vaalmilagu (Piper cubeba) - 1 Palam (35 Gram)
3. Kurosani omam (Hyoscyamus niger) - 1 Palam (35 Gram)
4. Parangipattai (Smilax china) - 1 Palam (35 Gram)
5. Karumseeragam (Nigella sativa) - 1 Palam (35 Gram)
6. Kadukkai (Terminalia chebula) - 1 Palam (35 Gram)
7. Chukku (Zingiber officinale) - 1 Palam (35 Gram)
8. Kadugu rogini (Picrorhizza scrophulariiflora) - 1 Palam (35 Gram)
9. Vaaluluvai (Celastrus paniculatus) - 1 Palam (35 Gram)
10. Arathai (Alpinia galanga) - 1 Palam (35 Gram)
11. Thippili (Piper longum) - 1 Palam (35 Gram)
12. Indu (Mimosa rubicaulis) - 1 Palam (35 Gram)
13. Seeni sarkkarai (Cane sugar) -¼ quantity of the other drug

PURIFICATION OF THE DRUGS :

Amukkara kizhangu

The drug was dried , grinded into powder boiled in steam for 3 hours and dried in sun light. The powder was again finely ground. (Cigicha rathna deepam)

Parangipattai

The drug was dried , grinded into powder boiled in steam for 3 hours and dried in sun light. The powder was again finely ground. (Cigicha rathna deepam)

Vaal milagu

The stalk was removed and dried in sun light. (Cigicha rathna deepam)

Kurosani omam

Rubbed with sand and waste materials were removed.

(Marunthu sei iyalum kalaium)

Karumseeragam

It is soaked in the lime stone extract and dried. (Marunthu sei iyalum kalaium)

Kadukkai

The seeds were removed and their outer coverings were taken.

(Marunthu sei iyalum kalaium)

Chukku

Soaked in limestone water for a period of time ,dry it and the outer layer was peeled off.

(Marunthu sei iyalum kalaium)

Kadugurogini

The drug was soaked in Neem juice for 3 hours and dried in sun light .

(Cigicha rathna deepam)

Vaaluluvai

The seeds were washed in aloevera juice and dried in sun light.

(Cigicha rathna deepam)

Arathai

Washed with water and dried. (Cigicha rathna deepam)

Thippili

Soaked in lime juice and dried. (Marunthu sei iyalum kalaium)

Indu

Remove the unwanted material . (Cigicha rathna deepam)

SOURCE OF TRIAL MEDICINE:

The required drugs was purchased from a well reputed country shop and raw drugs were authenticated by the medicinal botanist of National Institute of Siddha. The medicine was prepared in Gunapadam lab of National Institute of Siddha after proper purification. The prepared medicine was also be authenticated by the Gunapadam Head of the Dept for its completeness.All the ingredients mentioned in the formulation was purified as per the direction described in the Siddha literature.

PREPARATION :

The required quantity of the purified drugs was taken and grinded into fine powder and filtered by vasthrakayam procedure.

DOSAGE: ½ - 1 gram twice a day

VEHICLE: Ghee

DURATION: 45 days

DISPENSING: The prepared chooranam was dispensed in a pure container with required details and investigators contact number.

External Medicine : VETTIVER THYLAM.

(Ref : Aathma Ratchamirthamennum Vaidhya Sara Sangiragam)

INGREDIENTS :

1. Vettiver thool (Vettivera zizanioides) -10 Palam (350 Gram)
2. Water - 1 pathakku(10.7 lit)
3. Gingelly oil - 1 Padi (1.34 lit)
4. Adhimadhuram (Glycyrrhiza glabra) - 1/2 Palam (17.5 Gram)
5. Karumseeragam (Nigella sativa) - 1/2 Palam (17.5 Gram)
6. Devadharam (Cedrus deodra) - 1/2 Palam (17.5 Gram)
7. Kadukkai (Terminalia chebula) - 1/2 Palam (17.5 Gram)

PREPARATION :

350 grams of vettiver powder is taken and 10.7 liter of water was added to the mixture , boiled and reduced to 1/8 th of its volume .The above prepared decoction was mixed with gingely oil and other powdered ingredients and boiled to obtained the required oil.

DOSAGE: 100 ml

DURATION: 45 Days

DISPENSING : The prepared Thylam was dispensed in a pure container with required details and investigators contact number

PREPARED MEDICINE

AMUKKARA CHOORANAM

VETTIVER THYLAM

Pre clinical studies

4.1 Physicochemical Analysis

Particle Size

Particle size determination was carried out by optical microscopic method. In which the sample were dissolved in the sterile distilled water (app $1/100^{th}$ dilution). Diluted sample were mounted on the slide and fixed with stage of appropriate location. Light microscopic image were drawn with scale micrometer to arrive at the average particle size. Minimum 30 observations were made to ascertain the mean average particle size of the sample.

Percentage Loss on Drying

10gm of test drug was accurately weighed in evaporating dish .The sample was dried at 105^{o}C for 5 hours and then weighed.

Percentage loss in drying = Loss of weight of sample/ Wt of the sample X 100

Determination of Total Ash

3 g of test drug was accurately weighed in silica dish and incinerated at the furnace a temperature 400 ºC until it turns white in color which indicates absence of carbon. Percentage of total ash will be calculated with reference to the weight of air-dried drug.

Total Ash = Weight of Ash/Wt of the Crude drug taken X 100

Determination of Acid Insoluble Ash

The ash obtained by total ash test will be boiled with 25 ml of dilute hydrochloric acid for 6mins. Then the insoluble matter is collected in crucible and will be washed with hot water and ignited to constant weight. Percentage of acid insoluble ash will be calculated with reference to the weight of air-dried ash.

Acid insoluble Ash = Weight of Ash/Wt of the Crude drug taken X 100

Determination of Water Soluble Ash

The ash obtained by total ash test will be boiled with 25 ml of water for 5 mins. The insoluble matter is collected in crucible and will be washed with hot water, and ignite for 15mins at a temperature not exceeding 450ºC. Weight of the insoluble matter will be

subtracted from the weight of the ash; the difference in weight represents the water soluble ash. Calculate the percentage of water-soluble ash with reference to the air-dried drug.

Water Soluble Ash = Weight of Ash/Wt of the Crude drug taken X 100

Determination of Alcohol Soluble Extractive

About 5 g of test sample will be macerated with 100 ml of Alcohol in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105ºC, to constant weight and weigh. Calculate the percentage of alcohol-soluble extractive with reference to the air-dried drug.

Alcohol sol extract = Weight of Extract/ Wt of the Sample taken X 100

Determination of Water Soluble Extractive

About 5 g of the test sample will be macerated with 100 ml of chloroform water in a closed flask for twenty-four hours, shaking frequently during six hours and allowing to stand and for eighteen hours. Filter rapidly, taking precautions against loss of solvent, evaporate 25 ml of the filtrate to dryness in a tared flat bottomed shallow dish, and dry at 105ºC, to constant weight and weigh. Calculate the percentage of water-soluble extractive with reference to the air-dried drug.

Water soluble extract = Weight of Extract/ Wt of the Sample taken X 100

Determination of pH

About 5 g of test sample will be dissolved in 25ml of distilled water and filtered the resultant solution is allowed to stand for 30 mins and the subjected to pH evaluation

Thin Layer Chromatography and High Performance Thin Layer Chromatography:

1 .TLC Analysis

Test sample was subjected to thin layer chromatography (TLC) as per conventional one dimensional ascending method using silica gel 60F254, 7X6 cm (Merck) were cut with ordinary household scissors. Plate markings were made with soft pencil. Micro pipette were used to spot the sample for TLC applied sample volume 10-micro liter by using pipette at distance of 1 cm at 5 tracks. In the twin trough chamber with different solvent system Toulene: Ethyl Acetate: Acetic Acid (1.5:1:0.5) After the run plates are

dried and was observed using visible light Shortwave UV light 254nm and light long-wave UV light 365 nm

2. High Performance Thin Layer Chromatography Analysis

HPTLC method is a modern sophisticated and automated separation technique derived from TLC. Pre-coated HPTLC graded plates and auto sampler was used to achieve precision, sensitive, significant separation both qualitatively and quantitatively. High performance thin layer chromatography (HPTLC) is a valuable quality assessment tool for the evaluation of botanical materials efficiently and cost effectively. HPTLC method offers high degree of selectivity, sensitivity and rapidity combined with single-step sample preparation. In addition it is a reliable method for the quantitation of nano grams level of samples. Thus this method can be conveniently adopted for routine quality control analysis. It provides chromatographic fingerprint of phytochemicals which is suitable for confirming the identity and purity of medicinal plant raw materials.

a) Chromatogram Development

It was carried out in CAMAG Twin Trough chambers. Sample elution was carried out according to the adsorption capability of the component to be analysed. After elution, plates were taken out of the chamber and dried.

b) Scanning

Plates were scanned under UV at 366nm. The data obtained from scanning were brought into integration through CAMAG software. Chromatographic finger print was developed for the detection of phytoconstituents present in each extract and Rf values were tabulated.

TOXIC / HEAVY METAL ANALYSIS BY AAS

Methodology

Atomic Absorption Spectrometry (AAS) is a very common and reliable technique for detecting metals and metalloids in environmental samples. The total heavy metal content of the sample AC was performed by Atomic Absorption Spectrometry (AAS) Model AA 240 Series. In order to determination the heavy metals such as mercury, arsenic, lead and cadmium concentrations in the test sample AC

Sample Digestion

Test sample AC digested with 1mol/L HCl for determination of arsenic and mercury. Similarly for the determination of lead and cadmium the sample were digested with 1mol/L of HNO3. Standard reparation As & Hg- 100 ppm sample in 1mol/L HCl Cd & Pb- 100 ppm sample in 1mol/L HNO3

Standard reparation

As & Hg- 100 ppm sample in 1mol/L HCl

Cd & Pb- 100 ppm sample in 1mol/L HNO3

MICROBIAL CONTAMINATION TEST BY POUR PLATE METHOD

Objective

The pour plate techniques were adopted to determine the sterility of the product. Contaminated / un sterile sample (formulation) when come in contact with the nutrition rich medium it promotes the growth of the organism and after stipulated period of incubation the growth of the organism was identified by characteristic pattern of colonies. The colonies are referred to as Colony Forming Units (CFUs).

Methodology

Test sample was admixed with sterile distilled water and the mixture were been used for the sterility evaluation. About 1ml of the test sample was inoculated in sterile petri dish to which about 15 mL of molten agar 45^{o}C were added. Agar and sample were mixed thoroughly by tilting and swirling the dish. Agar was allowed to completely gel without disturbing it. (about 10 minutes). Plates were then inverted and incubated at 37^{o} C for 24-48 hours. Grown colonies of organism was then counted and calculated for CFU.

Observation

No growth was observed after incubation period, reveals the absence of specific pathogen

Test for Specific Pathogen:

Methodology

One part of the test sample was dissolved in 9 mL of sterile distilled water and the test sample was directly inoculated in to the specific pathogen medium (EMB, DCC,

Mannitol ,Cetrimide) by pour plate method. The plates were incubated at 37^{o}C for 24 - 72h for observation. Presence of specific pathogen identified by their characteristic color with respect to pattern of colony formation in each differential media.

Observation

No growth was observed after incubation period, reveals the absence of specific pathogen

Analysis of Pesticides Organochlorine, Organophosphorus and Pyrethroids:

Extraction

About 10 g of test substance were extracted with 100 ml of acetone and followed by homogenization for brief period. Further filtration was allowed and subsequent addition of acetone to the test mixture. Heating of test sample was performed using a rotary evaporator at a temperature not exceeding 40ºC until the solvent has almost completely evaporated. To the residue add a few milliliters of toluene R and heat again until the acetone is completely removed. Resultant residue will be dissolved using toluene and filtered through membrane filter**.**

Aflatoxin Assay by TLC (B1,B2,G1,G2):

Solvent

Standard samples was dissolved in a mixture of chloroform and acetonitrile (9.8 : 0.2) to obtain a solution having concentrations of 0.5 µg per ml each of aflatoxin B1 and aflatoxin G1 and 0.1 µg per ml each of aflatoxin B2 and aflatoxin G2.

Test solution:

Concentration 1 µg per ml

Procedure

Standard aflatoxin was applied on to the surface to pre coated TLC plate in the volume of 2.5 µL, 5 µL, 7.5 µL and 10 µL. Similarly the test sample was placed and Allow the spots to dry and develop the chromatogram in an unsaturated chamber containing a solvent system consisting of a mixture of chloroform, acetone and isopropyl alcohol (85 : 10 : 5) until the solvent front has moved not less than 15 cm from the origin. Remove the plate from the developing chamber, mark the solvent from and allow the plate to air-dry. Locate the spots on the plate by examination under UV light at 365 nm.

4.2 Phytochemical analysis

Test for Starch:

2ml of extract was treated with weak dil.Iodine solution**.**

Test For Reducing Sugar:

5ml of Benedict's qualitative solution was taken in a test tube and allowed to boil for 2 minutes and added 8 to 10 drops of the extract and again boil it for 2 minutes. The colour changes are noted.

Test for the Alkaloids:

a) 2ml of the extract was treated with 2ml of dil.potassium Iodide solution.

b) 2ml of the extract was treated with 2ml of dil.picric acid.

c) 2ml of the extract was treated with 2ml of dil.phosphotungstic acid.

Test for Tannic Acid:

2ml of extract was treated with 2ml of dil.ferric chloride solution**.**

Test for AminoAcid:

2 drops of the extract was placed on a filter paper and dried well. 20ml of Burette reagent is added**.**

Test for Coumarins:

To the test sample, 1 ml of 10% sodium hydroxide was added. The presence of coumarins is indicated by the formation of yellow colour.

Test for Saponins:

To the test sample, 5 ml of water was added and the tube was shaken vigorously. Copious lather formation indicates the presence of Saponins.

Test for glycosides- Borntrager's Test:

Test drug is hydrolysed with concentrated hydrochloric acid for 2 hours on a water bath, filtered and the hydrolysate is subjected to the following tests. To 2 ml of filtered hydrolysate, 3 ml of chloroform is added and shaken, chloroform layer is separated and 10% ammonia solution is added to it. Pink colour indicates presence of glycosides.

Test for flavonoids:

To the test sample about 5 ml of dilute ammonia solution were been added followed by addition of few drops of conc. Sulphuric acid. Appearance of yellow color indicates the presence of Flavonoids.

Test for phenols:Lead acetate test:

To the test sample; 3 ml of 10% lead acetate solution was added. A bulky white precipitate indicated the presence of phenolic compounds.

Test for steroids:

To the test sample, 2ml of chloroform was added with few drops of conc. Sulphuric acid (3ml), and shaken well. The upper layer in the test tube was turns into red and sulphuric acid layer showed yellow with green fluorescence. It showed the presence of steroids.

Triterpenoids:

Liebermann–Burchard test: To the chloroform solution, few drops of acetic anhydride was added then mixed well. 1 ml concentrated sulphuric acid was added from the sides of the test tube, appearance of red ring indicates the presence of triterpenoids.

Test for Cyanins:

Anthocyanin:

To the test sample, 1 ml of 2N sodium hydroxide was added and heated for 5 min at 100°C. Formation of bluish green colour indicates the presence of anthocyanin.

4.3 BIOCHEMICAL ANALYSIS

Biochemical Analysis of Amukkara chooranam was done at the Biochemistry lab at National Institute of Siddha, Chennai by the method of Kolkate.

Preparation of Extract:

5ml of sample was taken in a 250ml clean beaker and added with 50ml of distilled water. Then it is boiled well for about 10 minutes. Then it is cooled and filtered in a 100ml volumetric flask and made up to 100ml with distilled water. This preparation is used for the qualitative analysis of acidic/basic radicals and biochemical constituents in it.

PROCEDURE:

I. Test for Acid Radicals

Test for Sulphate:

2ml of the above prepared extract was taken in a test tube to this added 2ml of 4% dil ammonium oxalate solution

Test for chloride:

2ml of the above prepared extracts was added with 2ml of dil.HCl is added until the effervescence ceases off.

Test for Phosphate:

2ml of the extract were treated with 2ml of dil.ammoniummolybdate solution and 2ml of con.HNo3.

Test for carbonate:

2ml of the extract was treated with 2ml of dil. magnesium sulphate solution.

Test for Nitrate:

1gm of the extract was heated with copper turning and concentrated H_2So_4 and viewed the test tube vertically down.

II.Test for Basic radicals

Test for lead:

2ml of the extract was added with 2ml of dil.potassium iodine solution.

Test for copper:

One pinch (25mg) of extract was made into paste with con. HClin a watch glass and introduced into the non-luminuous part of the flame.

Test for Aluminium:

To the 2ml of extract dil.sodium hydroxide was added in 5 drops to excess.

Test for Iron:

a. To the 2ml of extract add 2ml of dil.ammonium solution

b. To the 2ml of extract 2ml of thiocyanate solution and 2ml of con HNo3 is added.

Test for Zinc:

To 2ml of the extract dil.sodium hydroxide solution was added in 5 drops to excess and dil.ammonium chloride was added.

Test for Calcium:

To 2ml of the extract was added with 2ml of 4% dil.ammonium oxalate solution

Test for Magnesium:

To 2ml of extract dil.sodium hydroxide solution was added in drops to excess.

Test for Ammonium:

To 2ml of extract 1 ml of Nessler's reagent and excess of dil.sodium hydroxide solution are added.

Test for Potassium:

A pinch (25mg) of extract was treated off with 2ml of dil.sodium nitrite solution and then treated with 2ml of dil.cobalt nitrate in 30% dil.glacial acetic acid.

Test for Sodium:

2 pinches (50mg) of the extract is made into paste by using HCl and introduced into the blue flame of Bunsen burner.

Test for Mercury:

2ml of the extract was treated with 2ml of dil.sodium hydroxide solution.

Test for Arsenic:

2ml of the extract was treated with 2ml of dil.sodium hydroxide solution.

4.4 Pharmacological actrivity

In-vitro Anti-Inflammatory Activity by Protein (Albumin) denaturation Assay

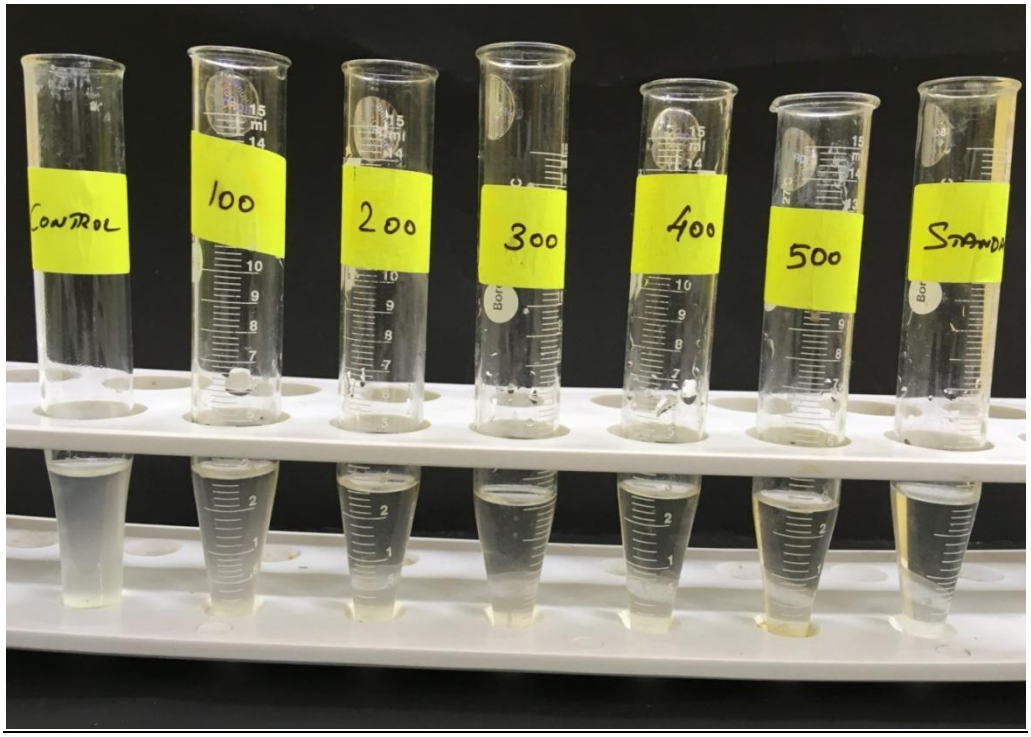
Albumin Denaturation Assay Procedure

In-vitro anti-inflammatory activity AC was studied using albumin denaturation technique. The reaction mixture consisted of bovine serum albumin (5% aqueous solution) and test sample AC at varying concentration ranges from 100 to 500 µg/ml and standard Diclofenac sodium at the concentration of100 µg /ml of final volume. pH was adjusted by using a small amount of 1N Hydrochloric acid. The samples were incubated at 37°C for 20 min and then heated at 57°C for 3 min. After cooling the sample, 2.5 ml of phosphate buffer solution was added into each test tube. Turbidity developed was measured spectrophotometrically at 660 nm, for control distilled water was used instead of test sample while product control tests lacked bovine serum albumin. The experiment was performed in triplicate.

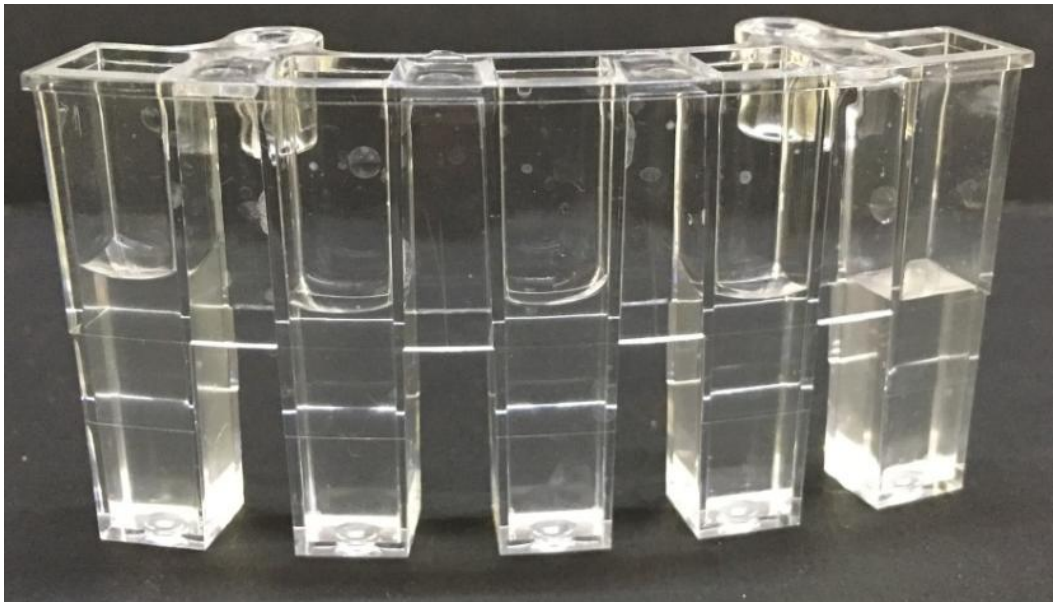
The Percentage protection from denaturation is calculated by using the formulae

$$\left[\frac{(A)_{\text{control}} - (A)_{\text{sample}}}{(A)_{\text{control}}}\right] \times 100.$$

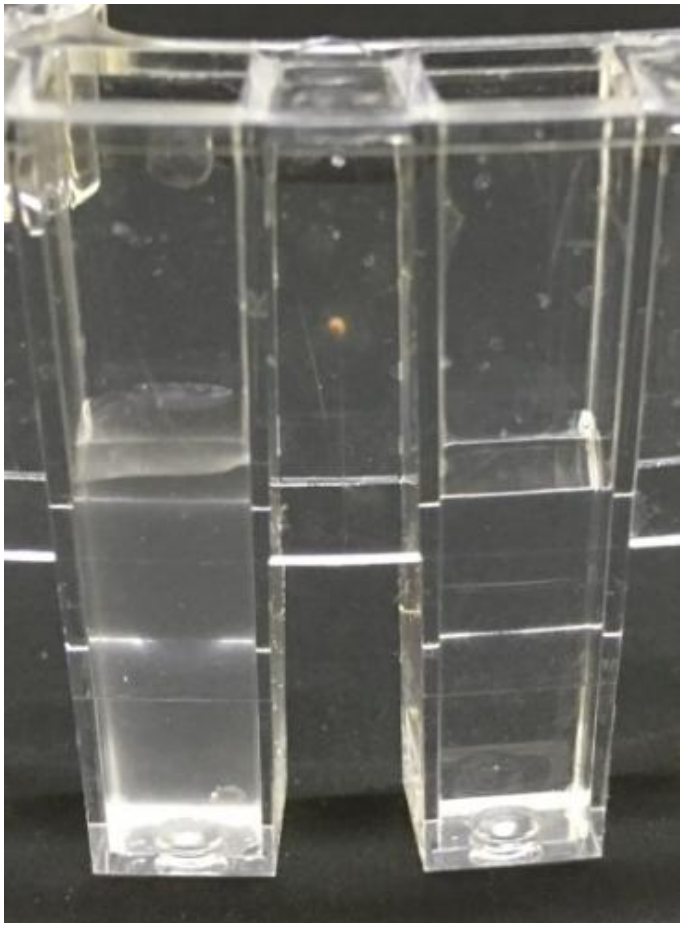
Preparation of Test and control



Absorbance of reaction mixture – Test Sample



Absorbance of reaction mixture – Control and Standard



Clinical studies

METHODOLOGY:

STUDY TYPE : An open clinical trial

STUDY PLACE : AYOTHIDASS PANDITHAR HOSPITAL (OPD & IPD),
NATIONAL INSTITUTE OF SIDDHA,
TAMBARAM SANATORIUM,
CHENNAI-47.

STUDY PERIOD : 24 Months

NUMBER OF PATIENTS : 30 Patients

DRUG FORMULATION:

- ❖ AMUKKARA CHOORANAM (INTERNAL)
- ❖ VETTIVER THYLAM (EXTERNAL)

INCLUSION CRITERIA:

- Age: 5 – 12 years
- Sex: Both male and female children.
- Erythema
- Thickness
- Scaling
- With or Without itching
- Auspitz sign +
- Candle crease sign +
- Cracks followed by itching
- Dryness of the skin
- Willing to cooperate for taking photographs whenever required with his\her consent.
- Patients who were willing to stay in IPD Ward for atleast 10 days or willing to attend OP Dept. as on required.
- Patient's informant / Parent willing to sign the informed consent stating that he/she will consciously stick to the treatment during 14 days but can opt out of the trial of his / her own conscious discretion.

EXCLUSION CRITERIA:

- Psoriatic arthritis
- Evidences of secondary infections in the lesions
- Eczema
- Psoriasis with evidence of .any other skin diseases
- Fungal infestation
- Systemic involvement

WITHDRAWAL CRITERIA:

- Exacerbation of symptoms and signs
- If any adverse reactions and unwanted symptoms occurred during the drug trial.
- Intolerance to the drug.
- Patient turned unwilling to continue in the course of clinical trial.
- Occurrence of any serious illness.

CLINICAL ASSESSMENT:

To assess the improvement by PASI Score.

CLINICAL ASSESSMENT

PASI Calculation					
Patient name					
Date					
Plaque Characteristic	**Rating Score**	**Body region and weighting factor**			
		Head	**Upper Limbs**	**Trunk**	**Lower Limbs**
Erythema	**0 = None**				
Thickness	**1 = Slight**				
	2 = Moderate				

Scaling	**3 = Severe** **4 = Very Severe**				
Totals		**A1=**	**A2=**	**A3=**	**A4=**
Weighting Factor		**A1x0.1=B1**	**A2x0.2=B2**	**A3x0.3=B3**	**A4x0.4=B4**
Surface area totals		**B1=**	**B2=**	**B3=**	**B4=**
Degree of involvement as % for each body region affected (score each region between 0 and 6)	**0 = None** **1 = 1-9%** **2 = 10-29%** **3 = 30-49%** **4 = 50-69%** **5 = 70-89%** **6 = 90-100%**				
Surface area totals x % involvement totals **Sum Scores above =**		**B1xscore= C1**	**B2xscore= C2**	**B3xscore= C3**	**B4xscore= C4**

SIDDHA ASSESSMENT:

- Nilam
- Kalam
- Uyirthathukkal
- Udal thathukkal
- Envagai thervugal
- Neerkuri
- Neikkuri

STUDY ENROLLMENT:

- In this study, patients reporting at the NIS OPD were examined clinically for enrolling in the study based on inclusion and exclusion criteria.
- The patients who were to be enrolled would be informed about the study, trial drug, possible outcomes and the objectives of the study in the language and terms understandable to them.

- After ascertaining the patient's informant willingness, informed consent (Form II) was obtained in writing from their parents in the consent form.
- All these patients were given Investigators phone number so as to report easily if any complications arise.
- Complete clinical history, complaints and duration, examination findings-- all would be recorded in the prescribed Proforma in the history and clinical assessment forms separately. Screening Form- I was filled up. Form III was used for recording the patient's history and clinical examination of symptoms and signs respectively.
- Patient were advised to take the trial drug and appropriate dietary advice

  (Form-IV) would be given according to the patient's perfect understanding

CONDUCT OF THE STUDY:

- The trial drug "**AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL)**" was given for 48 days and the Patients were advised to visit the OP once in 7 days.
- At each clinical visit clinical assessment was done and prognosis was noted.
- For IP patients the drug was given daily and prognosis was noted.
- For IP patients who were not in a situation to stay in the hospital for a long time they were advised to attend the OPD for further follow up.
- Siddha investigations like Neerkuri and Neikuri were carried over. After the end of the treatment the patient were advised to visit the OPD for another 1 month for follow up.
- If any trial patients who failed to collect the trial drug on the prescribed day but want to continue in the trial from the next day or two, be he/she was allowed, but defaulters more than three days was not allowed to continue and be withdrawn from the study with a fresh case being included

DATA MANAGEMENT:

- After enrolling the patient in the study, a separate file for each patient was opened and all forms were filed in the file. Study No. and Patient No. were entered on the top of file for easy identification.
- Whenever study patient visits OPD during the study period, the respective patient file was taken and necessary recordings were made at the assessment form or other suitable form.
- The Data recordings in all forms was monitored and scrutinized by HOD, Dept. of Kuzhandhai Maruthuvam.
- Data analysis was done with the help of senior research officer (Statistics) of NIS.

ADVERSE EFFECT / SERIOUS EFFECT MANAGEMENT:

If the trial patient develops any adverse reaction, he/she would be immediately withdrawn from the trial and proper management will be given in OPD of National Institute of Siddha. The details of adverse reactions will be recorded in prescribed Pharmacovigilance form and the same will be reported to Regional Pharmacovigilance center .

ETHICAL ISSUES:

- No other external or internal medicines was used.
- The data collected from the patient's informant will be recorded. The patient's informant will be informed about the diagnosis, treatment and follow-up.
- After the consent of the patient's informant (through consent form), patient was enrolled in the study.
- Informed consent was obtained from the patient's informant explaining in the understandable language to the patient's informant.
- Treatment would be provided free of cost.
- In conditions of treatment failure, adverse reactions, patients were given alternative treatment at the National Institute of Siddha with full care.

7. OUT COME:

Efficacy of the trial drug is measured by PASI Score.

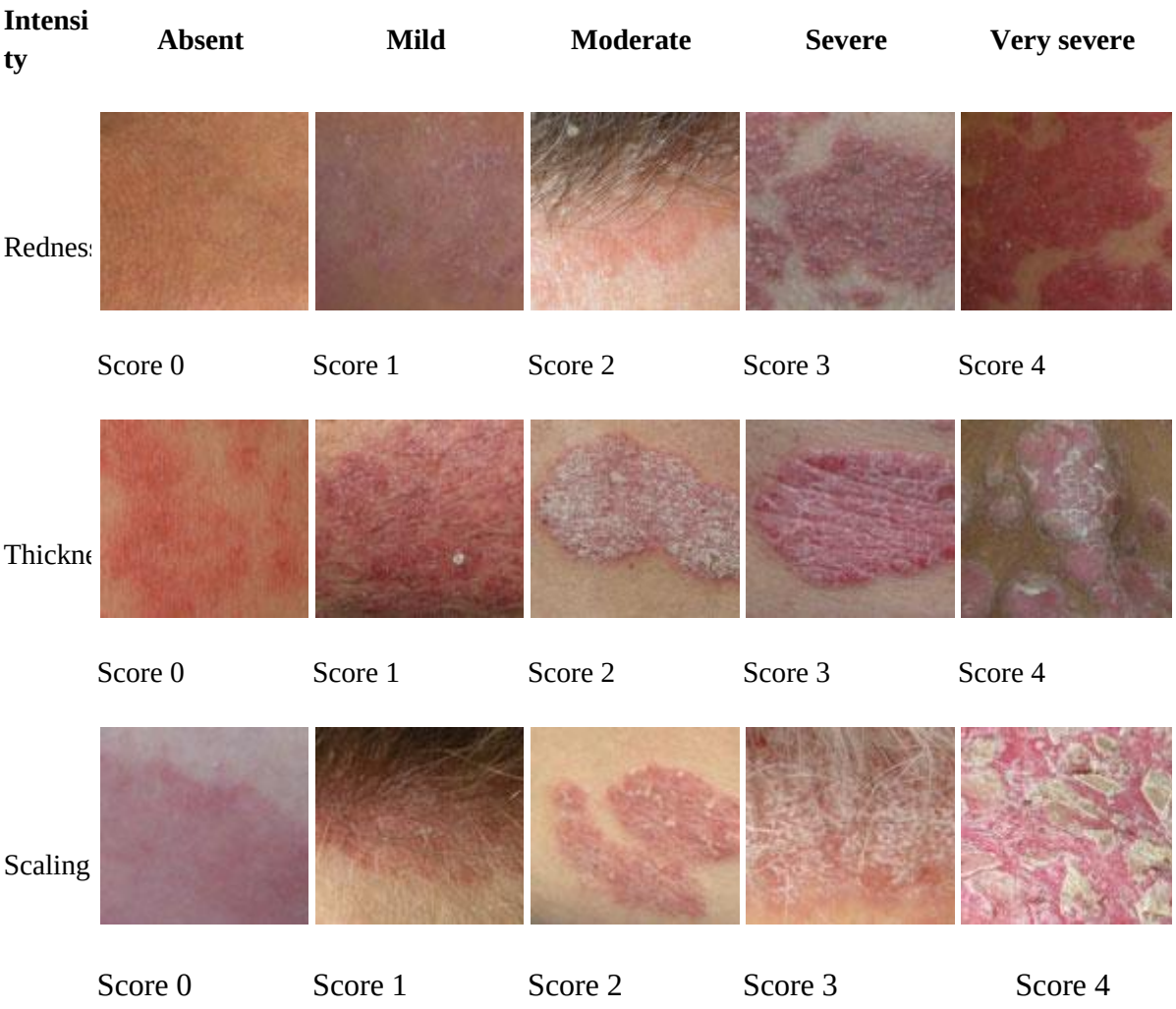
PASI score

A PASI score is a tool used to measure the severity and extent of psoriasis (**P**soriasis **A**rea and **S**everity **I**ndex).

Intensity

A representative area of psoriasis is selected for each body region. The intensity of redness, thickness and scaling of the psoriasis is assessed as none (0), mild (1), moderate (2), severe (3) or very severe (4).

Psoriasis: severity scoring



8. DATA COLLECTION FORMS:-

- FORM I - SCREENING & SELECTION PROFORMA
- FORM II a - CONSENT FORM
- FORM II b - ASSENT FORM
- FORM III - CASE RECORD FORM
- FORM IV - DIETARY FORM
- FORM V - INFORMATION SHEET.
- FORM VI - DRUG COMPLAINCE
- FORM VII - WITHDRAWAL FORM
- FORM VIII - ADVERSE EFFECT
- FORM IX - PHARMOCOVIGILANCE

OBSERVATION AND RESULTS

4.1 Physico chemical anakysis:

Organoleptic Character

Table 5.1

State	Solid
Appearance	Pale Brownish
Nature	Moderately Coarse powder
Odour	Strongly Aromatic

Fig 5.1 Amukkara Chooranam

Physicochemical Character of Amukkara Chooranam

Table 5.2

S.No	Parameter	Mean (n=3) SD
1.	Loss on Drying at 105 °C (%)	8.3 ± 3.55
2.	Total Ash (%)	2.64 ± 0.25
3.	Acid insoluble Ash (%)	1.60 ± 0.03

4.	Water Soluble Ash (%)	11.87 ± 2.99
5.	Alcohol Soluble Extractive (%)	36.9 ± 1.38
6.	Water soluble Extractive (%)	36.87 ± 1.72
7.	PH	5

PARTICLE SIZE DETERMINATION

Microscopic observation of the particle size analysis reveals that the average particle size of the sample AC was found to be 107.4± 32.18 µm further the sample AC has particle with the size range of lowest 46.63 µm to highest 163.3 µm

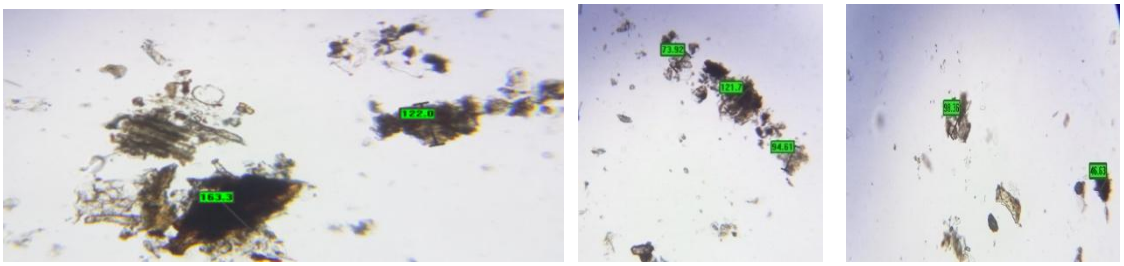


Fig 5.2

HIGH PERFORMANCE THIN LAYER CHROMATOGRAPHY :

HPTLC finger printing analysis of the sample AC reveals the presence of seven prominent peaks corresponds to presence of seven versatile phytocomponents present with in it. Rf value of the peaks ranges from 0.22 to 0.76. Further the peak 2 occupies the major percentage of area of 26.58 % which denotes the abundant existence of such compound. Followed by this peak 4 and 7 occupies the percentage area of 25.80 and 14.06 % respectively.

HPTLC finger printing of Sample AC

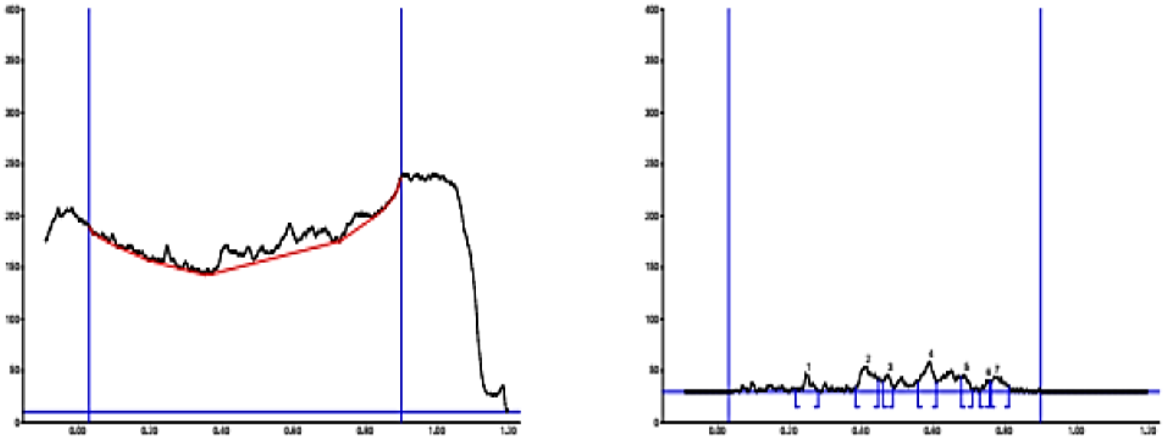


Fig 5.3 HPTLC finger printing

HPTLC peak table:

Table 5.3

Peak	Start Rf	Start Height	Max Rf	Max Height	Max %	End Rf	End Height	Area	Area %
1	0.22	2.0	0.25	18.3	13.90	0.28	1.0	273.2	10.74
2	0.38	4.4	0.41	24.3	18.48	0.45	11.9	675.9	26.58
3	0.46	9.9	0.48	16.9	12.89	0.49	3.5	226.7	8.92
4	0.56	10.1	0.59	29.2	22.20	0.61	10.1	656.2	25.80
5	0.68	14.4	0.69	16.1	12.25	0.71	1.4	222.5	8.75
6	0.73	0.0	0.75	11.6	8.83	0.76	10.7	130.9	5.15
7	0.76	10.0	0.78	15.0	11.45	0.81	5.3	357.6	14.06

Fluorescence analysis in dried powder

Sample ACwas subjected to fluorescence analysis under visible light and UV – Light at 365 nm under closed circuit cabinet. Each fluorescence characteristic of the treated sample was observed under ordinary light and then under UV light of wave lengths 365 nm. The drug was treated with acids viz., Conc. HCl, Conc. H2SO4, Conc. HNO3 and glacial acetic acid. The drug was treated with alkaline solutions viz., aqueous NaOHand ferric chloride. They were subjected to fluorescence analysis in visible light and in short UV- light (254 nm) and long UV- light (365 nm).

Fig 5.4 Visible light

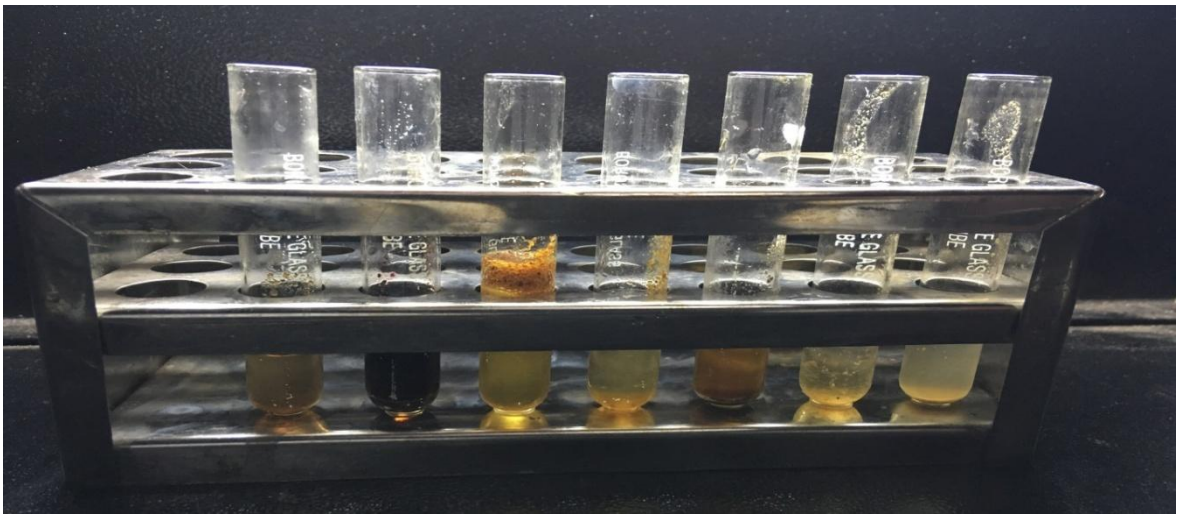


Fig 5.5 Short UV- light (254 nm)

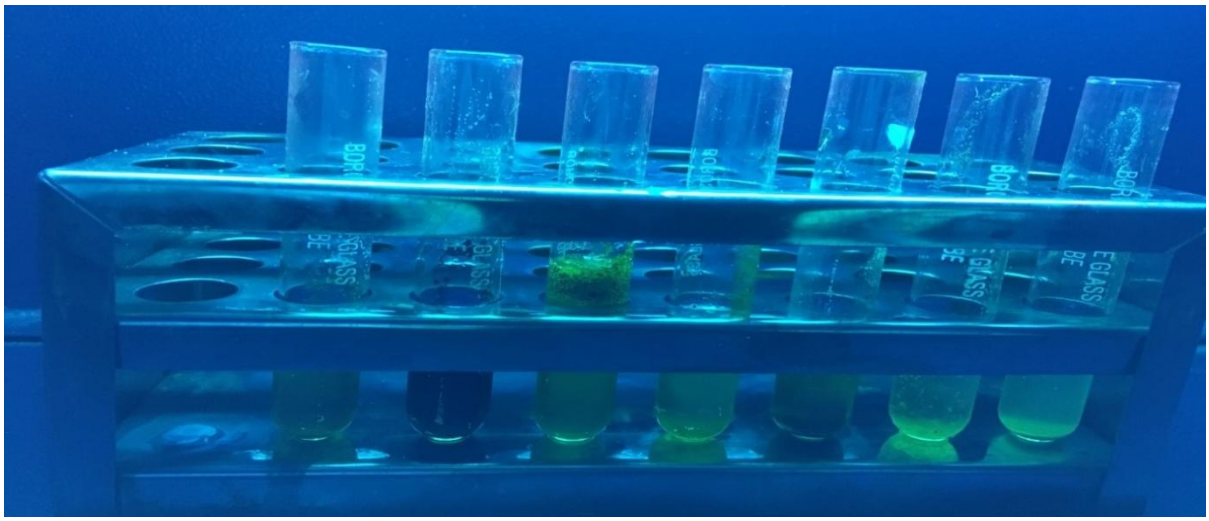
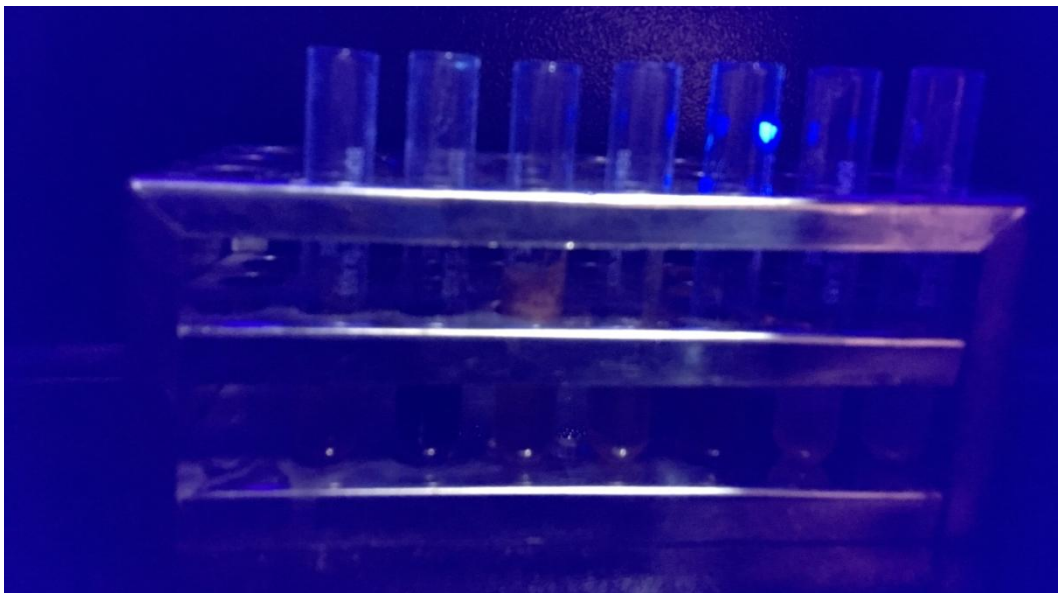


Fig 5.6 Long UV- light (365 nm)



S.No	Experiment	Visible light	Short UV – Light 254 nm	Long UV – Light 365 nm
1.	Sample + Conc. Hcl	Pale Yellow	Greenish yellow	Brownish
2.	Sample + Conc. Sulphuric Acid	Greenish Black	Blackish	Reddish black
3.	Sample + Conc. Nitric acid	Creamy yellow	Fluorescent green	Reddish brown
4.	Sample + Sodium hydroxide in water	Milky White	Fluorescent yellow	Fluorescent orange
5.	Sample + Ferric chloride	Brownish orange	Greenish black	Reddish
6.	Sample + glacial acetic acid	Pale Yellow	Lime Yellow	Fluorescent yellow
7.	Sample + Water	Milky White	yellow	Fluorescent yellow

HEAVY/TOXIC METAL ANALYSIS BY AAS:

Report and Inference

Results of the present investigation has clearly shows that the sample AC has no traces of heavy metal lead. Further the results shows the presence of Mercury, Arsenic and cadmium at 0.0008, 0.0004 and 0.001 ppm level.

The reported heavy metals such as mercury, arsenic and cadmium seems very low when compared to the allowed recommended limit

Table 5.4 for heavy metal analysis

Name of the Heavy Metal	Absorption Max Max	Result Analysis	Maximum Limit
Mercury	253.7 nm	0.0008 ppm	1 ppm
Lead	217.0 nm	BDL	10 ppm
Arsenic	193.7 nm	0.0004 ppm	3 ppm
Cadmium	228.8 nm	0.001 ppm	0.3 ppm

MICROBIAL CONTAMINATION TEST BY POUR PLATE METHOD:

No growth / colonies were observed in any of the plates inoculated with the test sample.

Table 5.5

Test	**Result**	**Specification**	**As per AYUSH/WHO**
Total Bacterial Count	Absent	NMT 10^5CFU/g	As per AYUSH specification
Total Fungal Count	Absent	NMT 10^3CFU/g	

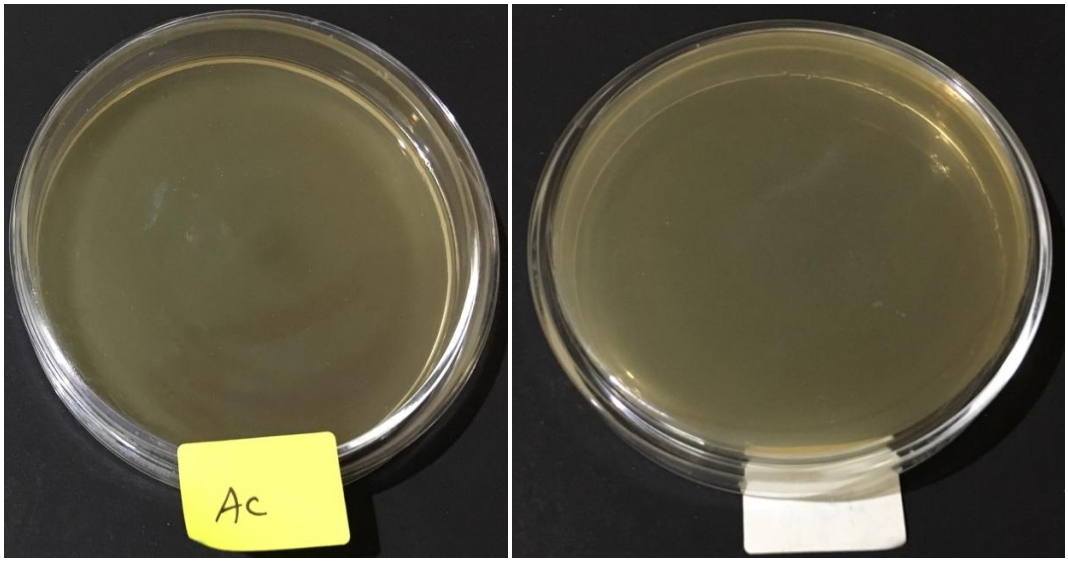


Fig 5.7 Microbial contamination test by Pour plate method

TEST FOR SPECIFIC PATHOGEN

Result

No growth / colonies were observed in any of the plates inoculated with the test sample.

Table 5.5

Organism	**Specification**	**Result**	**Method**
E-coli	Absent	Absent	As per AYUSH specification
Salmonella	Absent	Absent	
Staphylococcus Aureus	Absent	Absent	
Pseudomonas Aeruginosa	Absent	Absent	

Fig 5.8 Culture plate with E-coli and Salmonella specific medium

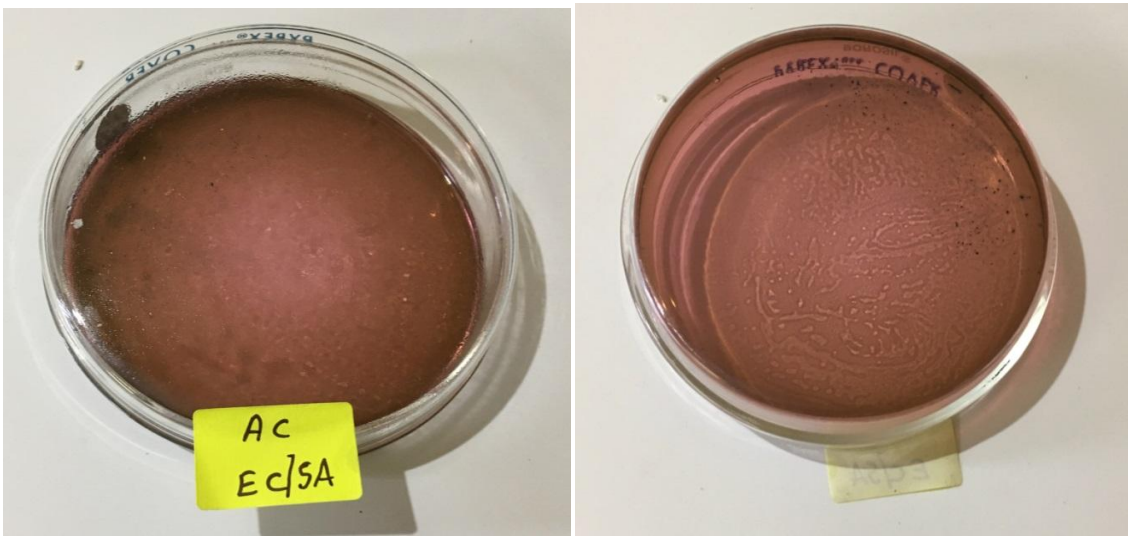


Fig 5.9 Culture plate with Staphylococcus Aureus specific medium

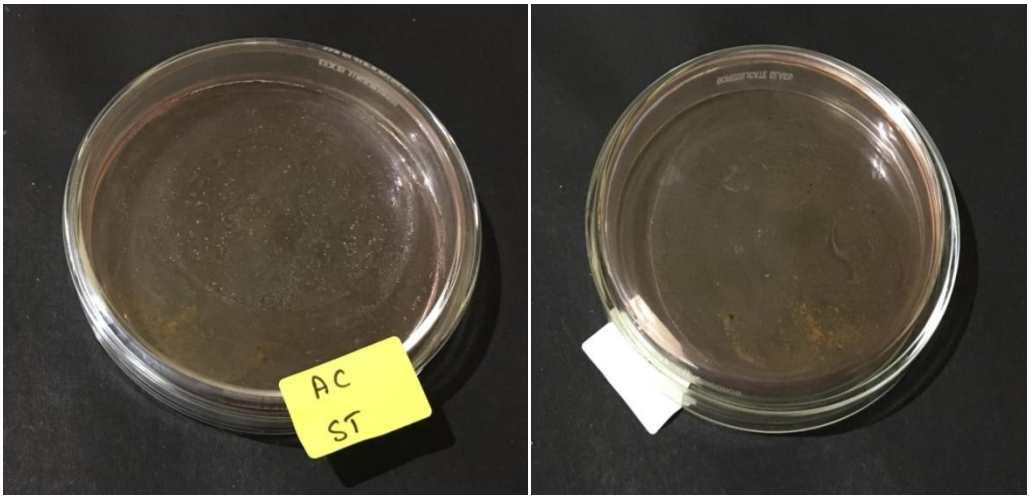
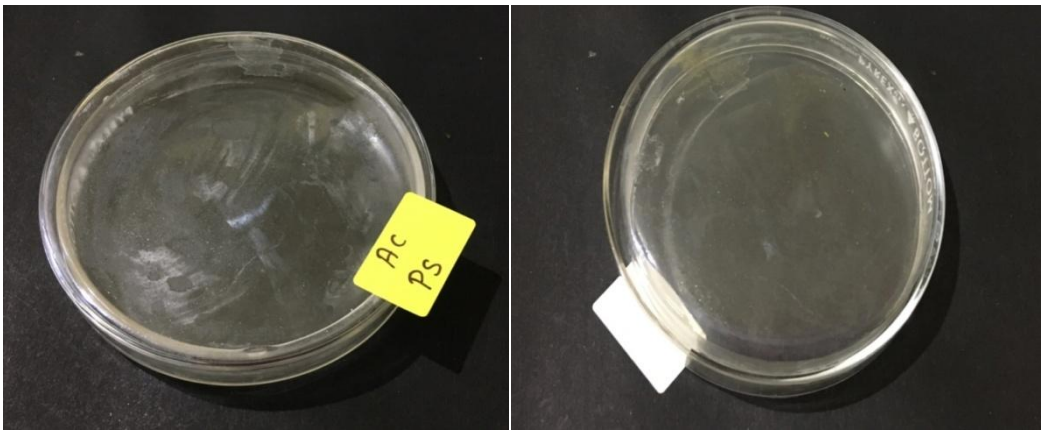


Fig 5.10 Culture plate with Pseudomonas Aeruginosa specific medium



ANALYSIS OF PESTICIDES ORGANOCHLORINE, ORGANOPHOSPHORUS AND PYRETHROIDS:

Result:

Table 5.7

Pesticide Residue **I.Organo Chlorine Pesticides**	**Sample AC**	**AYUSH Limit (mg/kg)**
Alpha BHC	BQL	0.1mg/kg
Beta BHC	BQL	0.1mg/kg
Gamma BHC	BQL	0.1mg/kg
Delta BHC	BQL	0.1mg/kg
DDT	BQL	1mg/kg
Endosulphan **II.Organo Phosphorus Pesticides**	BQL	3mg/kg
Malathion	BQL	1mg/kg
Chlorpyriphos	BQL	0.2 mg/kg
Dichlorovos	BQL	1mg/kg
III.Pyrethroid		
Cypermethrin	BQL	1mg/kg

The results showed that there were no traces of pesticides residues such as Organo chlorine, Organo phosphorus and pyrethroids in the sample AC. It further shows the above mentioned residues were not been detected in the sample AC provided for analysis.

AFLATOXIN ASSAY BY TLC (B1,B2,G1,G2):

Table 5.8

Aflatoxin	**Sample AC**	**AYUSH Specification Limit**
B1	Not Detected – Absent	0.5 ppm
B2	Not Detected – Absent	0.1 ppm
G1	Not Detected – Absent	0.5 ppm
G2	Not Detected – Absent	0.1 ppm

Result:

The results shown that there was no spots were been identified in the test sample loaded TLC plated when compare to the standard indicates that he sample were free from Aflatoxin B1, Aflatoxin B2, Aflatoxin G1, Aflatoxin G2.

4.3 BIOCHEMICAL ANALYSIS OF AMUKKARA CHOORANAM:

I Results of Acid radical studies:

Table 5.9

S.NO	Parameter	Observation	Result
1	Test for Sulphate	Cloudy appearance Present	Positive
2	Test for Chloride	-	Negative
3	Test For Phosphate	-	Negative
4	Test For Carbonate	Cloudy appearance Present	Positive
5	Test For Nitrate	-	Negative
6	Test for Sulphide	-	Negative
7	Test For Fluoride &oxalate	-	Negative
8	Test For Nitrite	-	Negative
9	Test For Borax	-	Negative

Interpretation

The acidic radicals test shows the presence of **Sulphate** and **Carbonate.**

II Results of basic radicals studies:

Table 5.10

S.NO	Parameter	Observation	Result
1	Test for Lead	-	Negative
2	Test for Copper	-	Negative
3	Test For Aluminium	-	Negative

4	Test For Iron	Mild red colour appear	Positive
5	Test For Zinc	White precipitate is formed	Positive
6	Test for Calcium	Cloudy appearance and white precipitate present	Positive
7	Test For Magnesium	White precipite is obtained.	Positive
8	Test For Ammonium	Brown colour appear	Positive
9	Test For Potassium	-	Negative
10	Test For Sodium	-	Negative
11	Test For Mercury	-	Negative
12	Test For Arsenic	-	Negative

Interpretation

The basic radical test shows the presence of **Iron, Zinc,Calcium,Ammonium**, **Magnesium** and absence of heavy metals such as lead, arsenic and mercury.

Fig 5.11 Test for Alkoloid

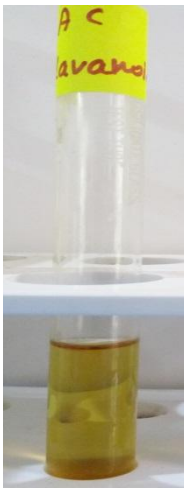


fig 5.12 Test for Flavonoid

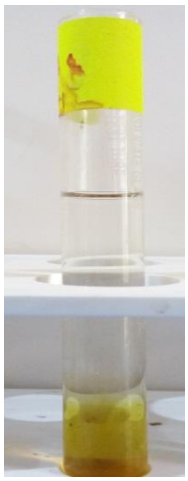


Fig 5.13 Test for Glycosides

fig 5.14 Test for Steroids

Fig 5.15 Test for Triterpenoids

Fig .5.16 Test for Coumarins

Fig 5.17 Test for Phenol

Fig 5.18 Test for Tannin

Fig 5.19 Test for Protein

fig 5.20 Test for Saponin

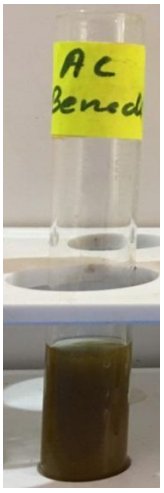


Fig 5.21 Test for Carbohydrate

fig 5.22 Test for Anthocyanin

4.4 PHARMACOLOGICAL ACTIVITY

In-vitro Anti-Inflammatory Activity by Protein (Albumin) denaturation Assay

Table 5.11

Concentration in µg/ml	**Percentage Inhibition of Protein Denaturation**
AC 100	17.02 ± 7.30
AC 200	32.06 ± 4.26
AC 300	38.34 ± 2.95
AC 400	51.52 ± 0.83
AC 500	70.89 ± 5.28
Diclofenac sodium (100 µg)	94.74 ± 4.25

Result Analysis

The result obtained from the present clearly indicates that the test drug AC was effective in inhibiting heat induced albumin denaturation. Maximum percentage inhibition of about 70.89 % was observed at 500 µg/ml when compareD to that of the Diclofenac sodium, a standard anti-inflammatory agent with the maximum inhibition 94.74 % at the concentration of 100 µg/ml.

Conclusion

From the result of the study it was concluded that the test drug AC possess significant anti-inflammatory property in protein denaturation assay.

CLINICAL STUDIES:

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO AGE

Table 5.12

S.NO	Age	No. Of. Cases	Percentage
1	5-6	2	7 %
2	7-8	5	17 %
3	9-10	11	36 %
4	11-12	12	40 %

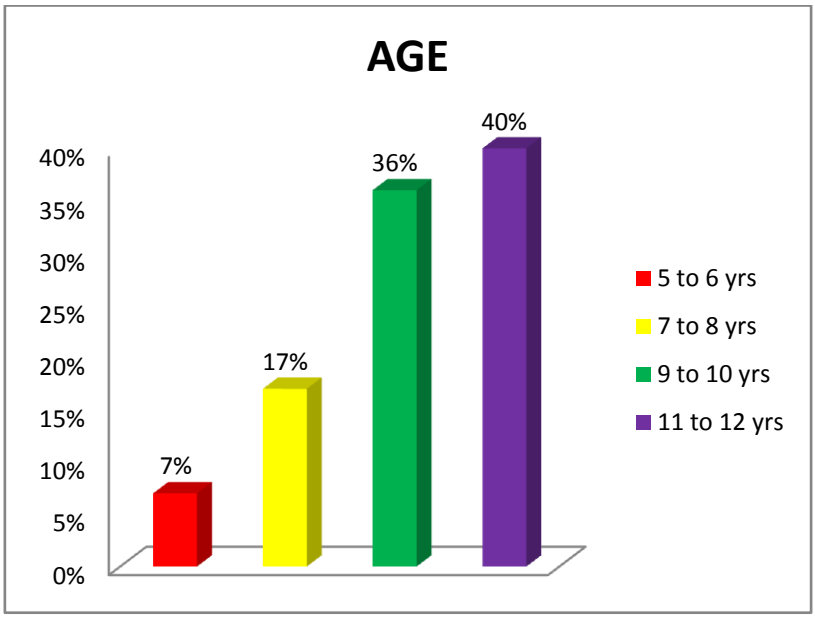


Fig 5.23

Inference:

Out of 30 patients, 40% of cases were between 11-12 years, 36 % of cases were between 9-10 years, 17 % of cases were within 7 – 8 years , 7% of cases were within 5 – 6 years. The highest incidence was seen in the age group of 11-12 years.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO SEX DISTRIBUTION

Table 5.13

S.No	Sex	No.Of.Cases	Percentage
1	Male Child	14	47 %
2	Female Child	16	53%

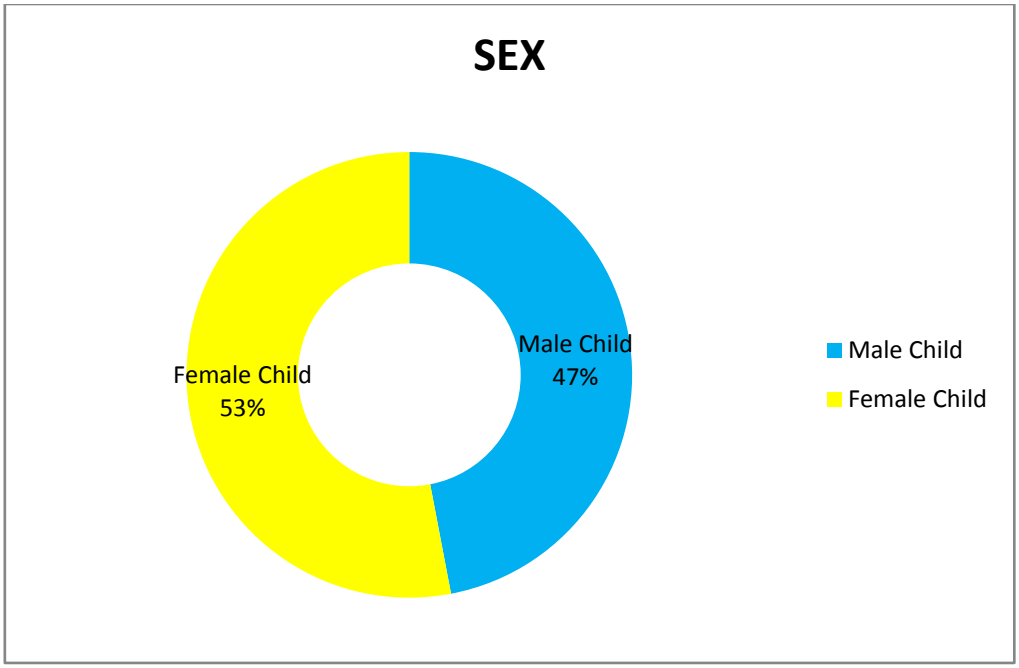


Fig 5.24

Inference

Out of 30 patients 47 % were male children and 53% were female children. According to this study both sexes were more or less equally affected which shows kaalanjaga padai is does not have any predominant on sex.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO SOCIO ECONOMICAL SYSTEM

Table 5.14

S.No	Socio economical System	No.Of.Cases	Percentage
1	**Upper**	**4**	**13 %**
2	**Upper Middle**	**14**	**47%**
3	**Middle Lower Middle**	**10**	**33 %**
4	**Lower Upper Middle**	**2**	**7 %**

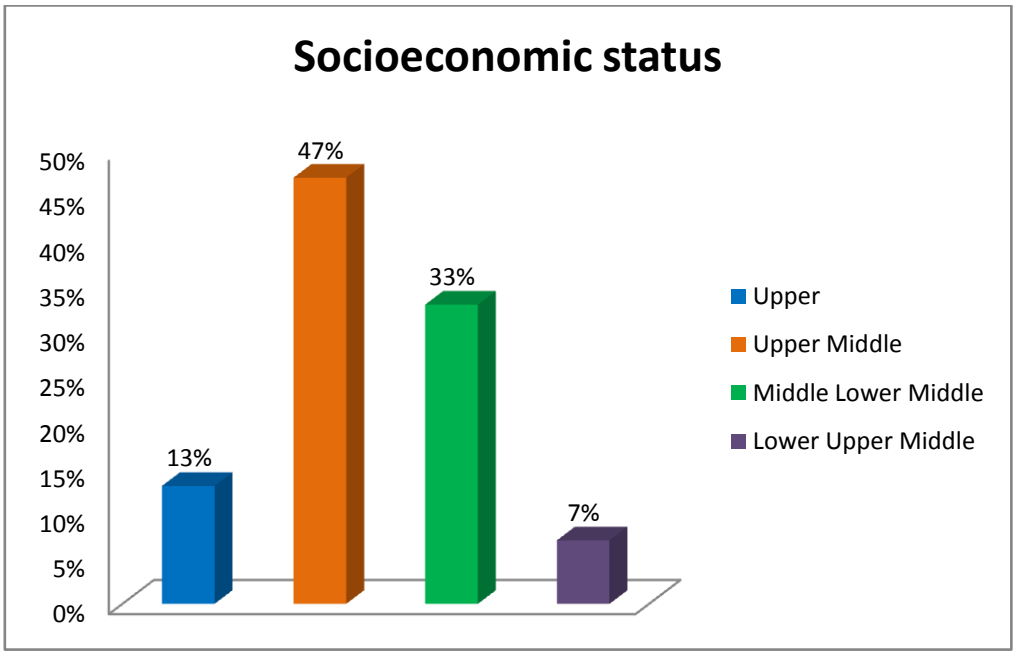


Fig 5. 25

Inference

About 13% patients belongs to upper class, 47% patients belongs to upper middle class, 33% patients belongs to Lower middle class and 7% patients of lower class. The highest incidence occurred in Upper middle income group.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO RELIGION

Table 5.15

S.No	Religion	No.Of.Cases	Percentage
1	**Hindu**	**27**	**90 %**
2	**Christian**	**2**	**7 %**
3	**Muslim**	**1**	**3 %**

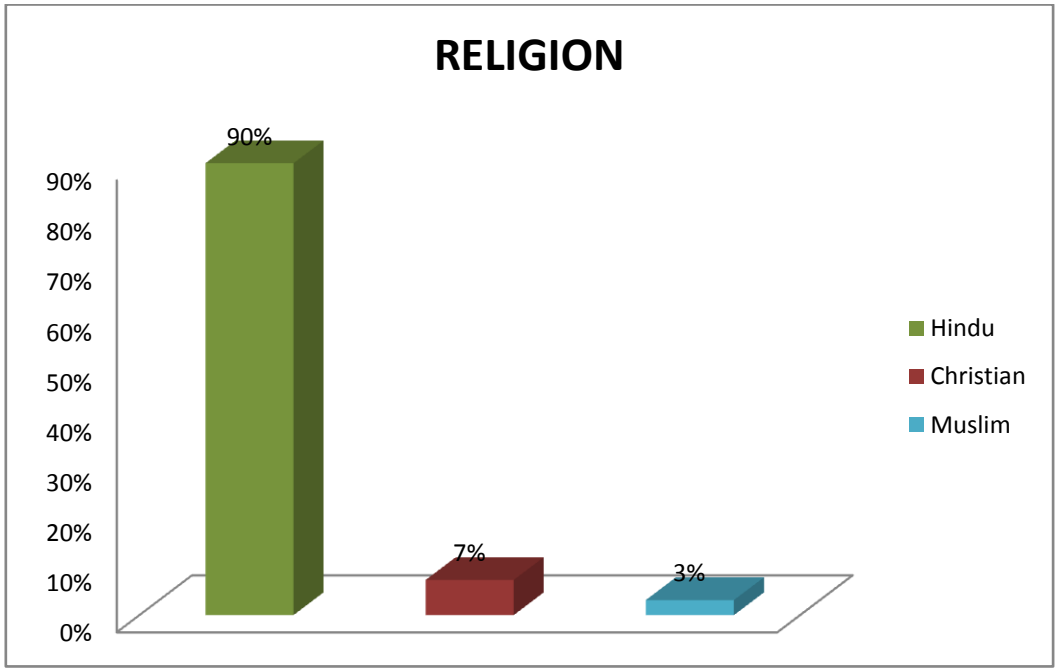


Fig 5.26

Inference

About 90% patients were Hindu, 7% patients were Christian, 3% patients were Muslim.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO THINAI:

Table 5.16

S.No	Thinai	No.Of.Cases	Percentage
1	Kurinji	1	3 %
2	Mullai	0	0 %
3	Marutham	11	37%
4	Neithal	18	60 %
5	Paalai	0	0 %

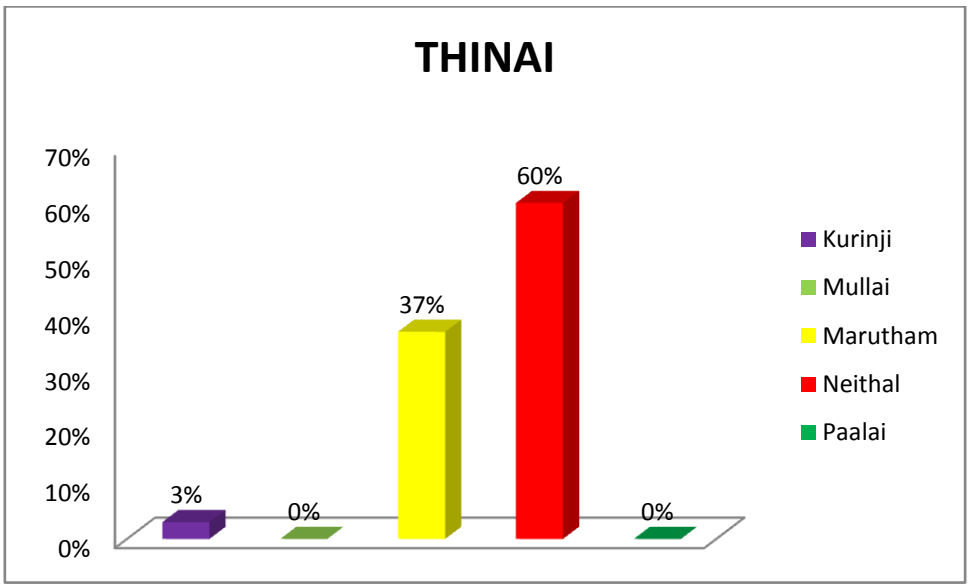


Fig 5.27

Inference

Among 30 patients, 60% were from Neithal land, 37 % from Marutham land, 0 % from Mullai land, and 3% from Kurinji land. Since this study was carried out in Chennai, the highest incidence of people seeking treatment were from the sourrounding of Chennai and hence highest incidence was noted in Neithal nilam.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO PARUVAKAALAM

Table 5.17

S.No	ParuvaKaalam	No.Of.Cases	Percentage
1	KaarKaalam	2	7 %
2	KoothirKaalam	4	13.33 %
3	Munpani	8	26.66 %
4	Pinpani	16	53.33 %
5	Ilavenil	0	0 %
6	Muthuvenil	2	6.66%

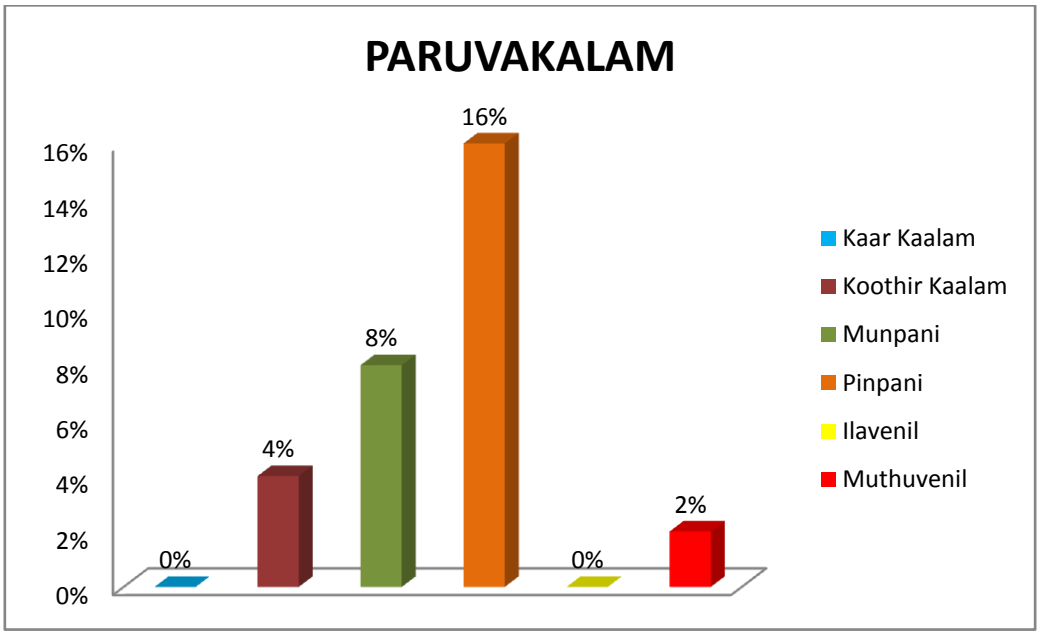


Fig 5.28

Inference

Among 30 patients, 53.33 % were treated during Pinpani kaalam, 26.66 % in Munpani kaalam, 7% in Kaar kaalam ,13.33% were in Koothir kaalam, 6.66 % were trated in muthuvenil kaalam. The highest incidence was noted in Pinpanikaalam.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO DURATION OF ILLNESS

Table 5.18

S.No	Duration of illness	No.Of.Cases	Percentage
1	1 month – 2 years	18	60 %
2	3 – 5 years	8	26 %
3	6 – 8 years	2	7%
4	9 – 10 years	2	7 %

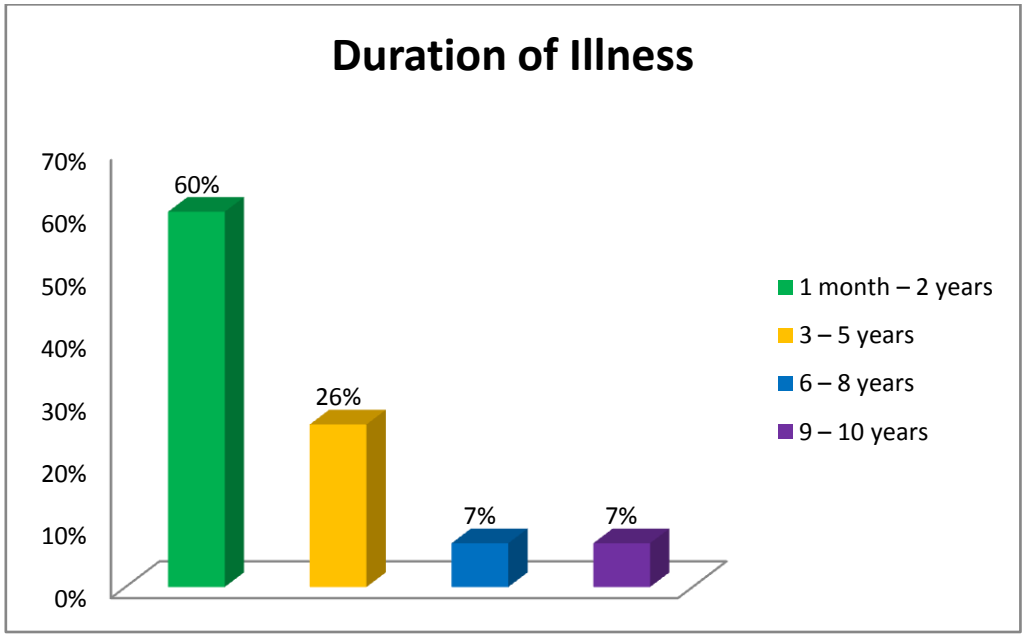


Fig 5.29

Inference

Among 30 patients 60% of cases were suffering within a duration of 1 month- 2 years, 26% of cases suffering for a duration of 3-5 years, 7% were having duration of 6 – 8 years , 7 % of cases has the duration of 9- 10 years.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO FOOD HABITS

Table 5.19

S.No	Food Habits	No.Of.Cases	Percentage
1	Vegtarian	2	7 %
2	Non – Vegtarian	28	93 %

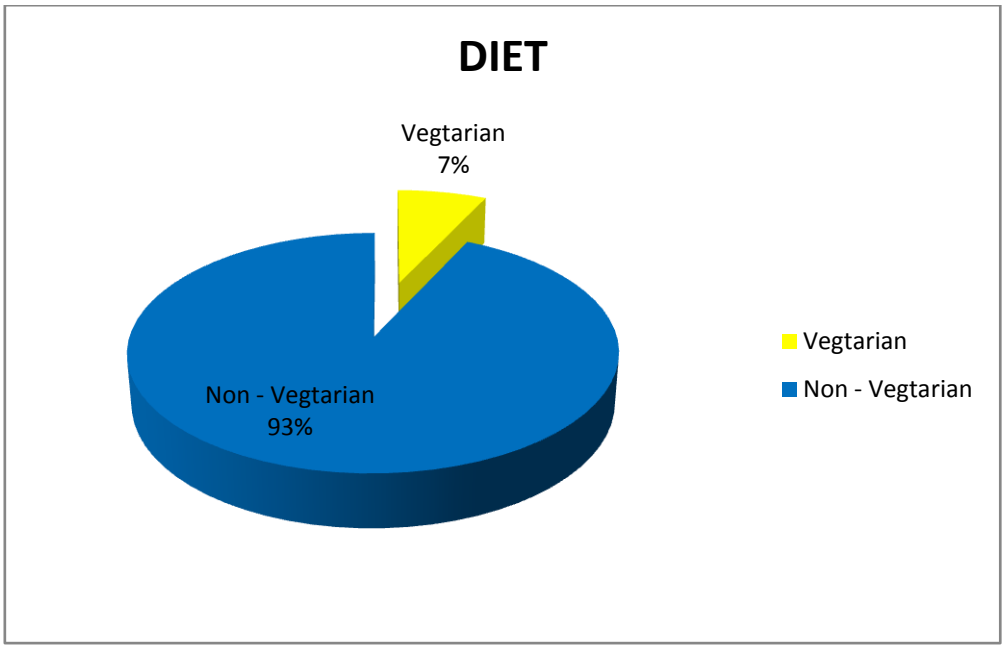


Fig 5.30

Inference

According to diet, Vegetarian 7%, Non vegetarian 93% were noted. The highest incidence was seen in Non-Vegetarian. But the disease has no influence on diet.

UYIRTHATHUKKAL

DISTRIBUTION OF CHILDREN WITH KAALANAJAGA PADAI ACCORDING TO DERANGEMENT OF VATHAM:

Table 5.20

S.No	Vaatham	No.Of.Cases	Percentage
1	Pranan	3	10 %
2	Abanan	0	0 %
3	Viyanan	30	100 %
4	Udhanan	0	0
5	Samanan	30	100 %
6	Naagan	0	0 %
7	Koorman	0	0 %
8	Kirukaran	0	0 %
9	Devathathan	0	0 %
10	Thananjeyan	-	-

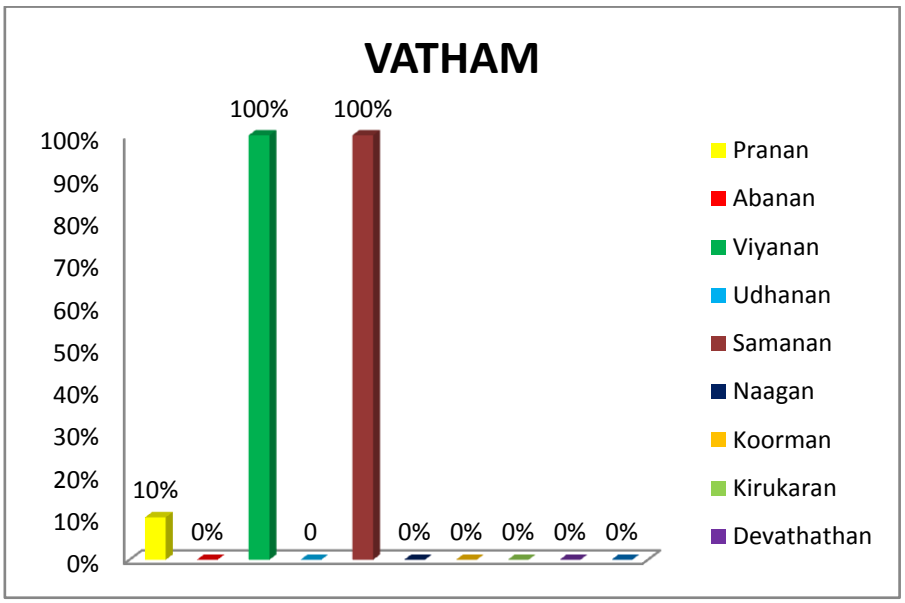


Fig 5.31

Inference

According to vatham, derangement of Pranan was noted in 10% of cases , Viyanan and Samanan was affected in 100% of childrens.

DISTRIBUTION OF CHILDREN WITH KAALANAJAGA PADAI ACCORDING TO DERANGEMENT OF PITHAM:

Table 5.21

S.No	Pitham	No.Of.Cases	Percentage
1	Anarpitham	0	0 %
2	Ranjagapitham	0	0%
3	Sadhagam	30	100 %
4	Prasagam	30	100 %
5	Alosagam	0	0 %

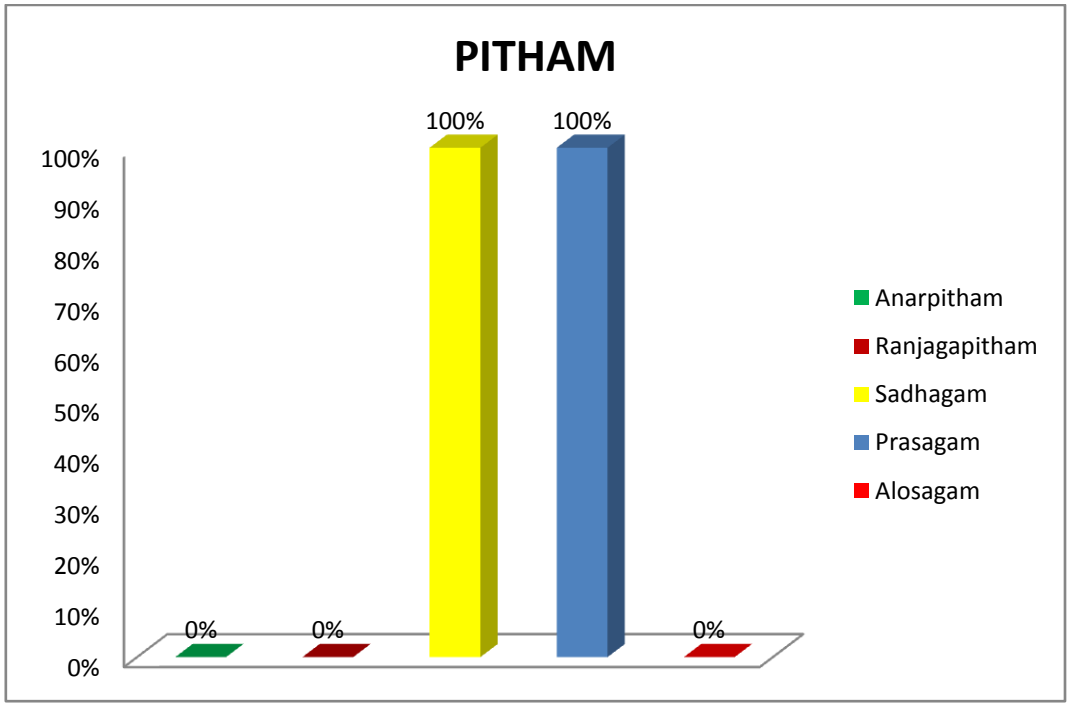


Fig 5.32

Inference

According to Pitham, derangement of prasagapitham and saathaga pitham was noted in 100% of cases due to erythema and scaly patches .

DISTRIBUTION OF CHILDREN WITH KAALANAJAGA PADAI ACCORDING TO DERANGEMENT OF EZHU UDARKATTUGAL

Table 5.22

S.No	UdarThathukkal	No.Of.Cases	Percentage
1	Saaram	30	100 %
2	Senneer	30	100 %
3	Oon	0	0%
4	Kozhuppu	0	0 %
5	Enbu	0	0 %
6	Moolai	0	0 %
7	Sukkilam / Suronitham	0	0%

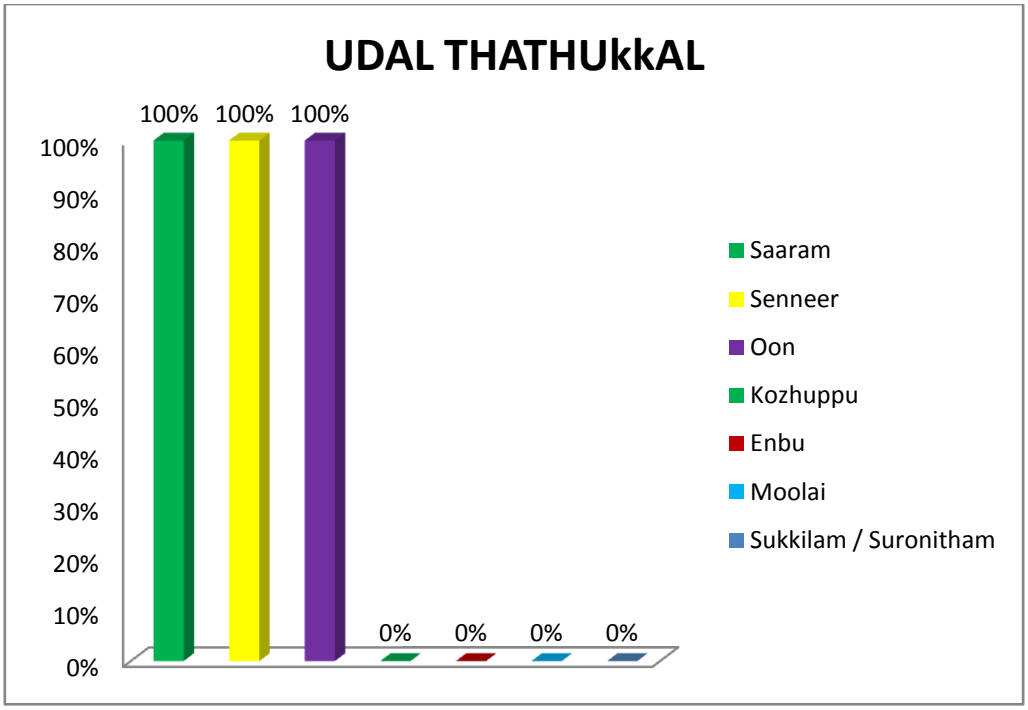


Fig 5.33

Inference

According to the study, Saram was affected in 100% of cases due to presence of fatigue, Senneer was affected in 100% due to itching,Oon was affected in 100%due to the presence of Scaling and erythematous lesion.

DISTRIBUTION OF CHILDREN WITH KAALANAJAGA PADAI ACCORDING TO DERANGEMENT OF ENN VAGAI THERVUGAL:

Table 5.23

S.No	EnvagaiThervu	No.Of.Cases	Percentage
1	Naa	0	0 %
2	Niram	30	100 %
3	Mozhi	0	0 %
4	Vizhi	0	0 %
5	Malam	0	0%
6	Moothiram	0	0 %
7	Naadi	0	0 %
8	Sparisam	30	100 %

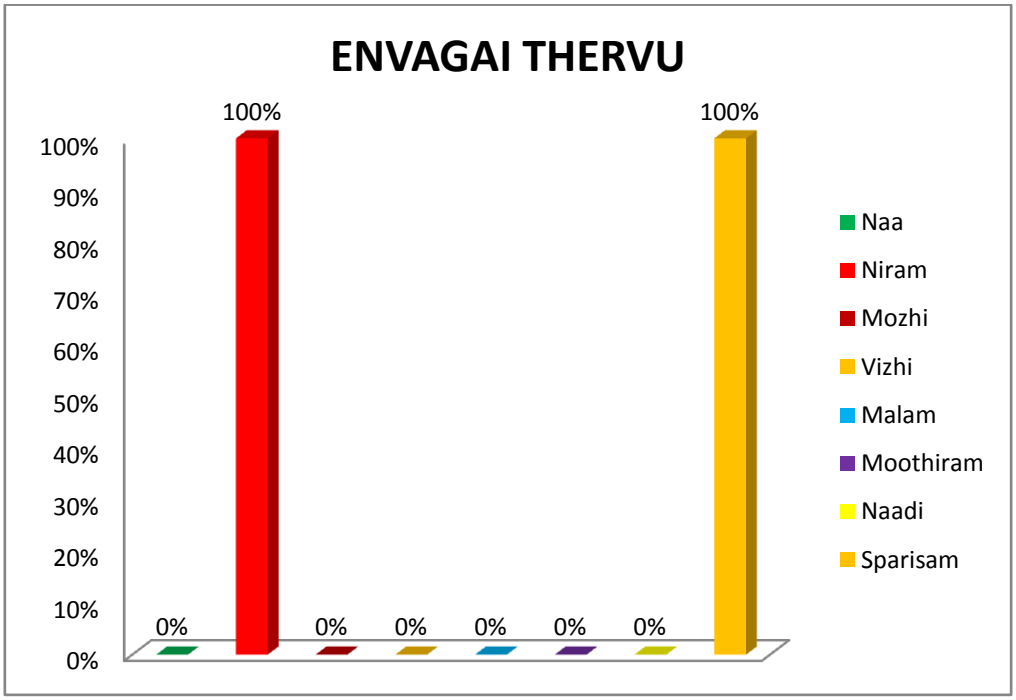


Fig 5.34

Inference

Out of 30 cases, 100% of the cases were affected by Niram.100% of cases affected by sparisam due to scaling and erythematous lesion present in the skin.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO OBSERVATION OF NAADI:

Table 5.25

S.No	Naadi	No.Of.Cases	Percentage
1	Vaathapitham	12	40 %
2	Pithavaatham	15	50 %
3	Kabapitham	3	10%

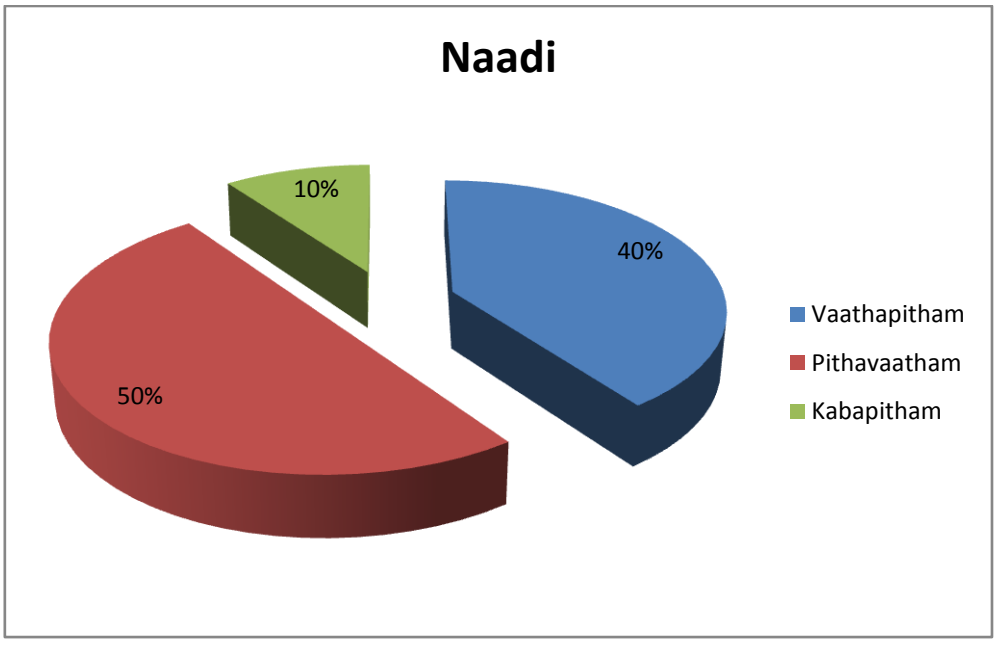


Fig 5.35

Inference:

Out of 30 cases 40 % of the cases were noted to have vaatha pitha naadi , 50% of the cases has pithavaatha naadi, 10 % of the cases has kabapitha naadi

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO OBSERVATION OF NEERKURI ANALYSIS:

Table 5.26

S.No	Neerkuri	No.Of.Cases	Percentage
1	Vaatha Neer	13	43.33 %
2	Pitha Neer	10	33.33 %
3	Kaba Neer	7	23.33 %

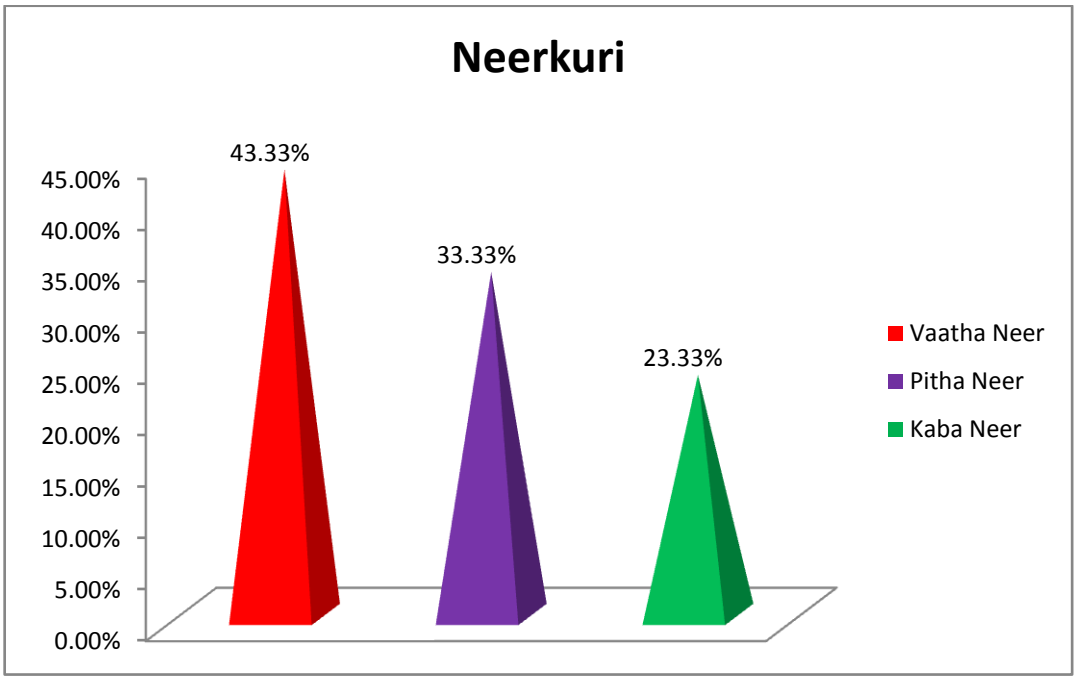


Fig 5.36

Inference:

Out of 30 cases 43.33% of the cases has vaatha neer,33.33% of the cases has pithaneer , 23.33% of the cases has kabaneer.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO OBSERVATION OF NEIKURI ANALYSIS:

Table 5.27

S.No	Neikuri	No.of.Cases	Percentage
1	Vaatham	7	23.33 %
2	Pitham	5	16.66 %
3	Kabam	18	60 %s

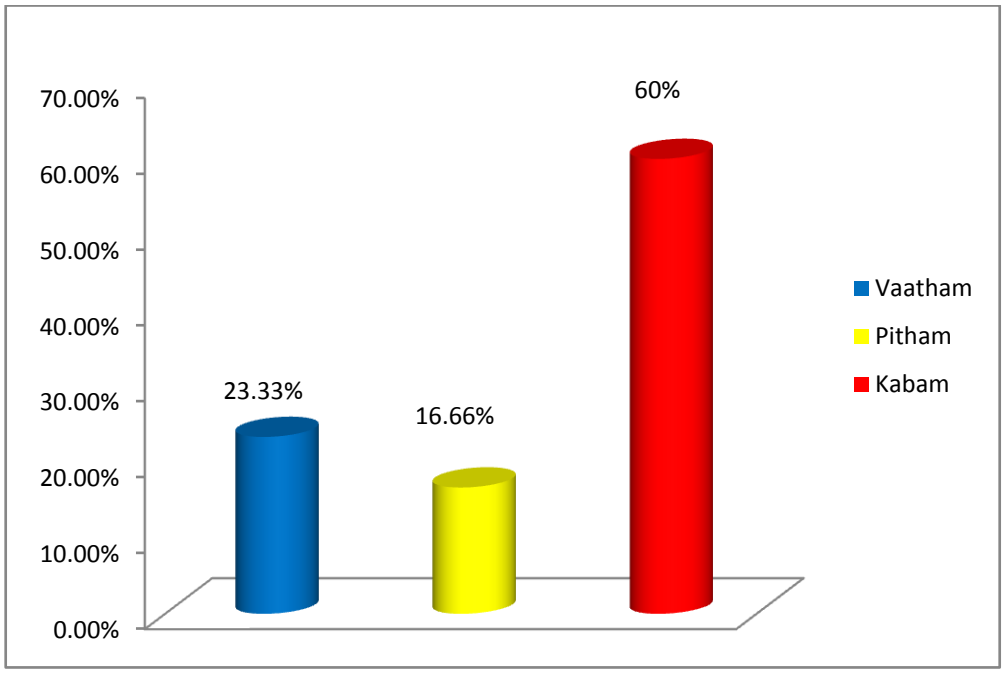


Fig 5.37

Inference:

Out of 30 cases , 60% of the cases has kabaneer , 23.33 % of the cases has vaathaneer , 16.66 % of the cases has pithaneer.

DISTRIBUTION OF CHILDREN WITH KAALANJAGA PADAI ACCORDING TO OBSERVATION OF SITE OF LESION:

Table 5.28

S.No	Site of Lesions	No.of.cases	Percentage
1	Head and Face	6	20 %
2	Upper Limb	14	46.66 %
3	Palm	3	10%
4	Trunk	12	40 %
5	Lower Limb	16	53.33 %
6	Feet	11	36.66 %

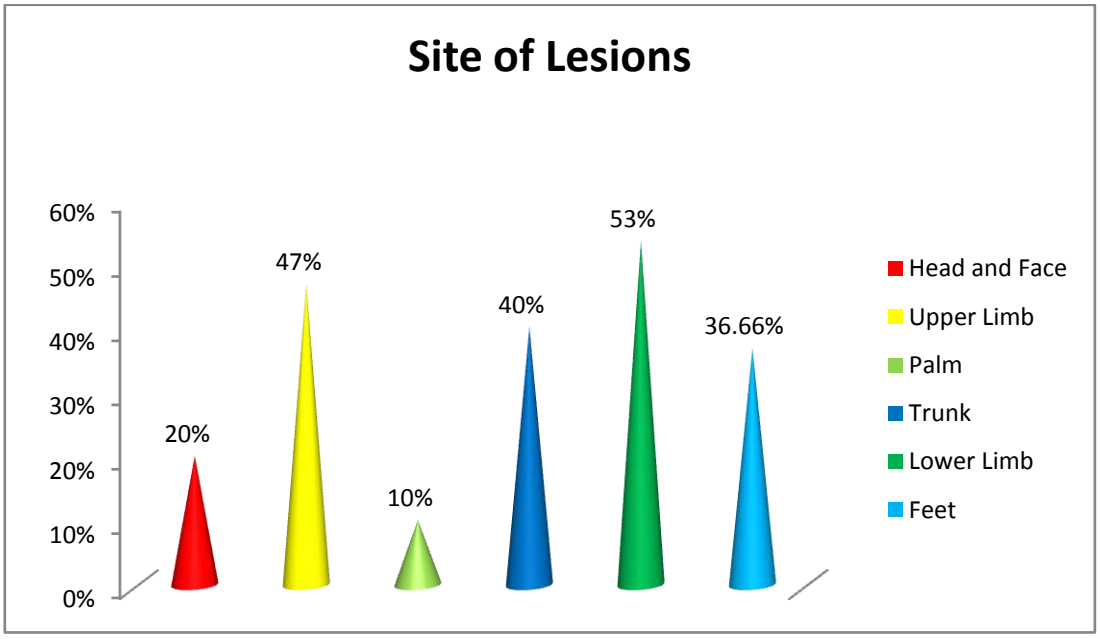


Fig 5.38

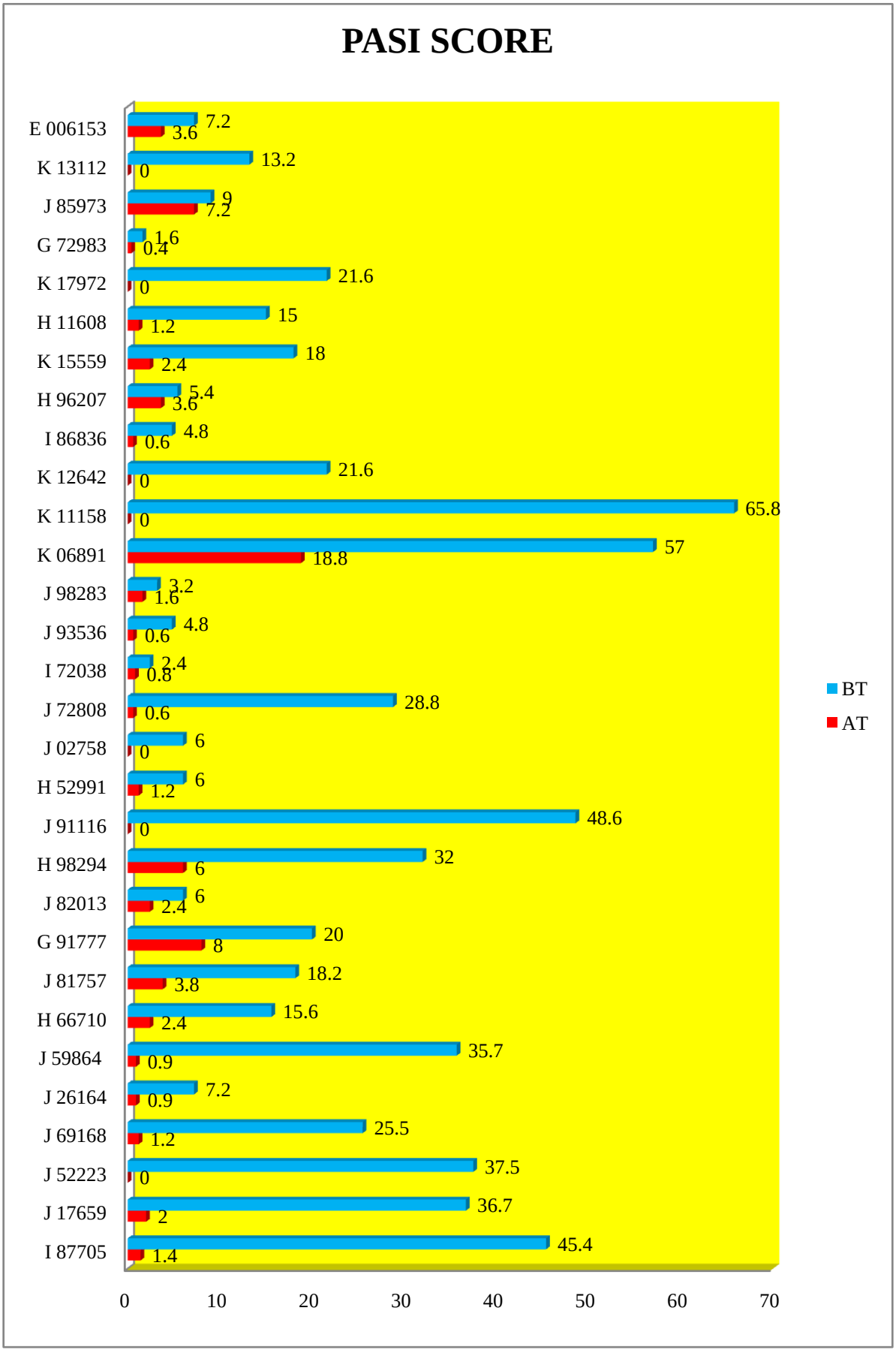
Inference:

Out of 30 cases , 20% of the cases has lesion in head and face, 47% of the cases has lesion in upper limb , 10% of the cases has lesion in palm, 40% of the cases has lesion in trunk, 53% of the cases has lesion in lower limb, 36.66% of the cases has lesion in face.

CASE REPORT OF CHILDREN BASED ON PASI SCORE:

S.No	OP / IP No	Age / Sex	BT	AT	PASI	Result
1	I 87705	11 / FCH	45.4	1.4	PASI 75	GOOD
2	J 17659	5 .5 /MCH	36.7	2	PASI 75	GOOD
3	J 52223	9 / MCH	37.5	0	PASI 75	GOOD
4	J 69168	7 / MCH	25.5	1.2	PASI 75	GOOD
5	J 26164	5 / FCH	7.2	0.9	PASI 75	GOOD
6	J 59864	10 / MCH	35.7	0.9	PASI 75	GOOD
7	H 66710	12 / FCH	15.6	2.4	PPPASI 50	MODERATE
8	J 81757	10 / FCH	18.2	3.8	PASI 50	MODERATE
9	G 91777	10 / MCH	20	8	PPPASI 50	MODERATE
10	J 82013	9 / FCH	6	2.4	PPPASI 25	MILD
11	H 98294	9 / MCH	32	6	PPPASI 50	MODERATE
12	J 91116	10 / FCH	48.6	0	PASI 75	GOOD
13	H 52991	12 / FCH	6	1.2	PASI 50	MODERATE
14	J 02758	8 / FCH	6	0	PASI 75	GOOD
15	J 72808	12 / FCH	28.8	0.6	PPPASI 75	GOOD
16	I 72038	12 / MCH	2.4	0.8	PASI 75	GOOD
17	J 93536	7 / FCH	4.8	0.6	PPPASI 50	MODERATE
18	J 98283	12 / MCH	3.2	1.6	PASI 50	MODERATE
19	K 06891	9 / FCH	57	18.8	PASI 25	MILD
20	K 11158	12 / MCH	65.8	0	PASI 75	GOOD
21	K 12642	11 / MCH	21.6	0	PASI 75	GOOD
22	I 86836	11 / MCH	4.8	0.6	PPPASI 50	MODERATE
23	H 96207	10 / FCH	5.4	3.6	PASI 25	MILD
24	K 15559	12 / FCH	18	2.4	PPPASI 50	MODERATE
25	H 11608	12 / FCH	15	1.2	PPPASI 50	MODERATE
26	K 17972	9 / MCH	21.6	0	PASI 75	GOOD
27	G 72983	7 / FCH	1.6	0.4	PASI 75	GOOD
28	J 85973	8 / FCH	9	7.2	PPPASI 25	MILD
29	K 13112	11 / MCH	13.2	0	PPPASI 75	GOOD
30	E 006153	9 / MCH	7.2	3.6	PPPASI25	MILD

GOOD MODERATE MILD


PASI SCORE
E 006153
K 13112
J 85973
G 72983
K 17972
H 11608
K 15559
H 96207
I 86836
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K 11158
K 06891
J 98283
J 93536
I 72038
J 72808
J 02758
H 52991
J 91116
H 98294
J 82013
G 91777
J 81757
H 66710
J 59864
J 26164
J 69168
J 52223
J 17659
I 87705
7.2
3.6
13.2
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9
7.2
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0.8
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0.6
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1.2
48.6
0
32
6
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2.4
20
8
18.2
3.8
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2.4
35.7
0.9
7.2
0.9
25.5
1.2
37.5
0
36.7
2
45.4
1.4
0
10
20
30
40
50
60
70
BT
AT

Images of chilfrens Before and After treatment

Case : 1 Before treatment

After treatment

Case : 2 Before Treatment

After treatmaent

Case : 3 Before Treatment

Case : 3 After Treatment

Case 4 Before treatment

Case 4 After treatment

Case 5 Before treatment

Case 5 After treatment

Case 6 Before and After treatment

Case 7 Before and After treatment

Case 8 Before And After Treatment

Case 9 Before and After treatment






Case 10 Before and After Treatment

STATISTICAL ANALYSIS:

All collected data were entered into MS Excel software using different columns as variables and rows as patients, SPSS software was used to perform statistical analysis. Basic descriptive statistics include frequency distributions and cross-tabulations were performed. The quantity variables were expressed as Mean ± Standard Deviation and qualitative data as percentage. A probability value of <0.05 was considered to indicate as statistical significance. Paired 't' test was performed for determining the significance between before and after treatment. In my study statistical analysis was done for PASI score.

Paired Sample Statistics:

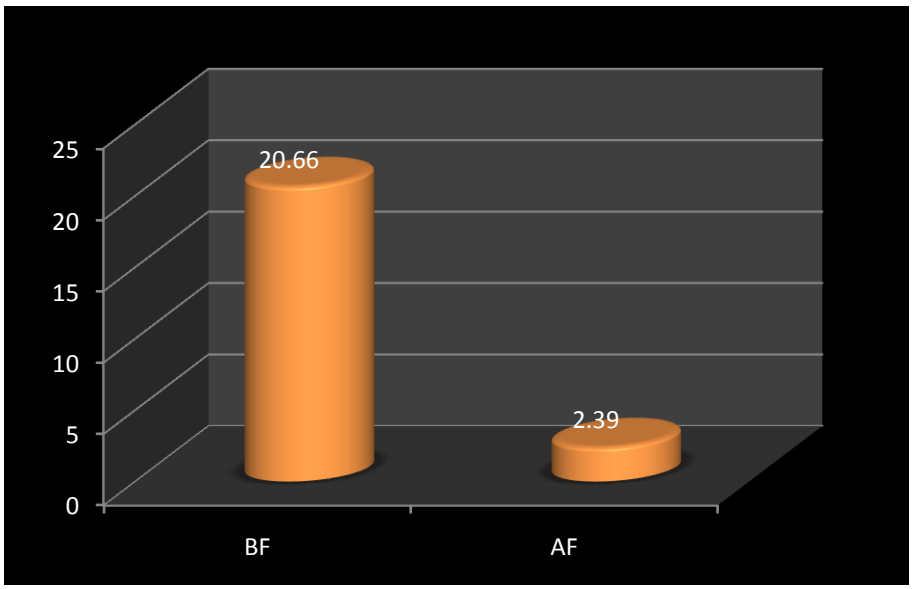
PASI Score:

Distribution of Mean and Standard Deviation of before and after treatment is as follows.

PASI Score	Mean ± Standard Deviation	t Value	p Value
Before treatment	20.66 ± 17.36		
After treatment	2.39 ±3.75	5.95	P < 0.0001

The Mean Standard Deviation of PASI Score before and after treatment was 20.66 ± 17.36 and 2.39 ± 3.7 respectively which is **statistically significant (p < 0.0001)**.

The analysis reveals that there is 88% reduction in erythema, scales and thickening of skin.



DISCUSSION

`"KALANJAGA PADAI" is one among the skin disease affecting the age group 5 – 12 years as encountered in the Siddha maruthuvam Sirappu. Kalanjaga padai more or less resembles Psoriasis in morden literature.The disease is characterised by Erythema, Thickening of skin , Scaling , Itchying and pin- point bleeding

In the present study, thirty cases were treated in the outpatient department, according to clinical features mentioned in textbook of Siddha maruthuvam Sirappu. The choosen drug Amukkara chooranam is indicated for Kuttam (Kalanjaga padai is one of the variety of skin disease which comes under kuttam) and hence this trial drug is selected for treating the children with Kalanjaga padai. The diagnosis is confirmed based on clinical feautures and treated with the drug "AMUKKARA CHOORANAM" and the prognosis is clearly observed.

The study is conducted after being approved by IEC of NIS, vide Approval No: NIS/IEC/2016/11-17/14.10.2016.The trial is registered in Clinical trial Registry of India with Reg.No CTRI/2017/06/008935.The Authentication of ingredients of the trial drug was obtained from Medicinal Botanist Dr.D.Aravind,MD(S),MSc., National Institute of Siddha, Chennai.

The trial drugs were prepared by the author in the Gunapadam practical laboratory of National Institute of Siddha, under the guidance and supervision of the guide. The trial drug was prepared by the standard operating procedure as mentioned in the protocol.

Physicochemical analysis was done as a preliminary evaluation the trial drug Amukkara chooranam. Loss on drying (LOD) is a method of measuring the amount of water and volatile matters in a sample when the sample is dried. Low moisture content is always desirable for higher stability of drugs. In Amukkara chooranam, the loss on drying at 105^{o}C was found to be 8.3±3.55. So the determination of moisture content shows the good stability of the drug Amukkara chooranam.

The total Ash values are helpful in determining the quality and purity of drugs, especially in powder form. The total Ash value in Amukkara chooranam was found to be

2.64±0.25. The minimal level of total ash shows the less inorganic residue and purity of the drug Amukkara chooranam.

The extractive values help to indicate the nature of chemical constituents present in the drug. The water soluble substance is polar in nature and the alcohol has the ability to dissolve non-polar substance.The water soluble extract value of Amukkara chooranam is 11.8±2.99 % and the Alcohol soluble extractive is 36.9±1.38%. It shows the possibility of water soluble constituents such as sugars, plant acids, mucilage and alcohol soluble substance such as tannins, resin sand alkaloids to be present in the drug.

Strongly Acidic nature of the drug can cause harmful effects to the body, so the screening for the pH is important for drugs. It represents the chemical nature of the drug and the site of absorption of non-polar drug. The pH of Amukkara chooranam is found to be 5, that is weekly acidic and safe in pH. The weekly acidic drugs are rapidly absorbed from stomach. So the drug Amukkara chooranam can act rapidly on oral administration.

In HPTLC, Rf value of the peaks ranges from 0.22 to 0.76. Further the peak 2 occupies the major percentage of area of 26.8 % which denotes the abundant existence of such compound. Followed by this peak 4 and 7 occupies the percentage area of 2.80 and 14.06% respectively.

In heavy metals analysis mercury was not detected and lead, arsenic, cadmium were present within the permissible limit.

Aflatoxin like B2, G1, G2were not detected except B1 which was within the permissible limit.

Biochemical analysis

The Bio chemical analysis of trial medicine showed the presence of Sulphate, Carbonate, Iron, Zinc, Calcium, Ammonium and Magnesium.

Phytochemicals such as Starch, Sugar, Alkaloids, Tannic acid, flavonoids, steroids, triterpenoids, coumarin, saponins and phenol are present in the trial drug

Pharmacological activity

The anti-inflammatory activity of the trial drug AMUKKARA CHOORANAM was done at Noble Research Solutions, Sathyabama University, Chennai. In-vitro Anti-inflammatory activity of AMUKKARA CHOORANAM was performed by protein (Albumin) denaturation method. The result obtained from the present study clearly indicates that the test drug was effective in inhibiting heat induced albumin denaturation. Maximum percentage inhibition of about 70.89% was observed at 500 µg/ml when compared to that of the Diclofenac sodium, a standard anti-inflammatory agent with the maximum inhibition of 94.74 % at the concentration of 100µg/ml.

Clinical study:

In clinical studies the patients were recruited for the trial based on inclusion and exclusion criteria and after getting the consent from the patient. 30 patients were included in this study. The 30 patients were treated in OPD of Ayothidoss Pandithar Hospital of National Institute of Siddha.Separate proforma was maintained for every patient. Progress chart was also maintained to monitor the clinical signs and symptoms of the disease.

The treatment was aimed at normalizing the deranged thodams and providing relief from symptoms. Before treatment the patients were advised to adapt lifestyle modifications such as oil bath weekly once and to follow good dietary regimen.

Children with small sized lesion (i.e) lesion over a small area was also selected for the study owing to the prolonged duration of lesion for 2- 4 years.The trial drug exhibits a tremendous results in this condition also which proves that this drugs are very efficatious in treating children with long standing psoriasis.

The patients were treated with trial drug AMUKKARA CHOORANAM for 45 days. Patients were instructed to take the medicines regularly and advised to follow pathiyam. Patients were asked to visit the hospital regularly once in every 7 days for collecting the trial medicine and assessment. After completion of the study, the patients were advised to visit the Out-Patient ward of Department of Kuzhanthai Maruthuvam for 1 month for follow-up. The results observed during the study period were discussed below.

Clinical review

Out of 30 patients, 40% of cases were between 11-12 years, 36 % of cases were between 9-10 years, 17 % of cases were within 7 – 8 years , 7% of cases were within 5 – 6 years. The highest incidence was seen in the age group of 11-12 years.

Out of 30 patients 47 % were male children and 53% were female children. According to this study both sexes were more or less equally affected which shows kaalanjaga padai is does not have any predominant on sex.

About 13% patients belongs to upper class, 47% patients belongs to upper middle class, 33% patients belongs to Lower middle class and 7% patients of lower class. The highest incidence occurred in Upper middle income group.

About 90% patients were Hindu, 7% patients were Christian, 3% patients were Muslim.

Among 30 patients, 60% were from Neithal land, 37 % from Marutham land, 0 % from Mullai land, and 3% from Kurinji land. Since this study was carried out in Chennai, the highest incidence of people seaking treatment were from the sourrounding of Chennai and hence highest incidence was noted in Neithal nilam.

Among 30 patients, 53.33 % were traeted in Pinpani kaalam, 26.66 % were treated in Munpani kaalam, 7% in Kaar kaalam ,13.33% were from Koothir kaalam, 6.66 % were treated in muthuvenil kaalam. The highest incidence was noted in Pinpanikaalam.

Among 30 patients 60% of cases were suffering with a duration of 1 month- 2 years, 26% of cases suffering for with duration of 3-5 years, 7% were having duration of 6 – 8 years , 7 % of cases has the duration of 9- 10 years.

According to diet, Vegetarian 7%, Non vegetarian 93% were noted. The highest incidence was seen in Non-Vegetarian. But the disease has no influence on diet.

According to vatham, derangement of Pranan was noted in 10% cases, Viyanan and Samaanan was affected 100% of childrens .

According to Pitham, derangement of prasagapitham and Saathagapitham was noted in 100% cases due to erythematous and scaly patches .

According to the study, Saram was affected in 100% of cases due to presence of fatigue, Senneer was affected in 100% due to the presence of itching,Oon was affected 100% of cases due to the prsecnce of scaling and erythematous lesion.

Out of 30 cases, 100% of the cases were affected by Niram.100% of cases affected by sparisam due to scaling and erythematous lesion present in the skin.

Out of 30 cases 40 % of the cases were noted to have vaatha pitha naadi , 50% of the cases has pithavaatha naadi, 10 % of the cases has kabapitha naadi**.**

Out of 30 cases 43.33% of the cases has vaatha neer,33.33% of the cases has pithaneer , 23.33% of the cases has kabaneer.

Out of 30 cases , 60% of the cases has kabaneer , 23.33 % of the cases has vaathaneer , 16.66 % of the cases has pithaneer

Out of 30 cases , 20% of the cases has lesion in head and face, 47% of the cases has lesion in upper limb , 10% of the cases has lesion in palm, 40% of the cases has lesion in trunk, 53% of the cases has lesion in lower limb, 36.66% of the cases has lesion in face.

CLINICAL IMPROVEMENT:

The Mean Standard Deviation of PASI Score before and after treatment was 20.66 ± 17.36 and 2.39 ± 3.7 respectively which is **statistically significant (p < 0.0001)**.

The analysis reveals that there is 88% reduction in erythema, thickening of skin and scaling.

SUMMARY

- Clinical Evaluation of Amukkara chooranam (Internal) and Vettiver thylam (External) for Kalanjaga padai(Psoriasis) in children was done after getting approved by IEC of National Institute of Siddha. [IEC No: NIS/IEC/2016/11-17/14.10.2016] and the trial is registered in Clinical trial Registry of India with Reg.No CTRI /2017/06/008935 [Registered on: 29/06/2017].
- The raw drugs of Amukkara chooranam and Vettiver thylam were identified and authentication certificate was obtained.
- The drug Amukkara choornam was a fine powder pale brownish in colour with strongly aromatic odour.
- The drug has a particle size with the range of lowest 46.63 µm to highest 163.3 µm. The loss on drying indicates the moisture content of the drug was determined as 8.3 ± 3.55%. The total ash was found to be 2.64 ± 0.25% which indicates the inorganic content of the drug. The water soluble ash was calculated as 11.87 ± 2.99% and the value of acid insoluble ash was found to be 1.60 ± 0.03% which indicates that the drug contains negligible amount of siliceous matter. The water soluble extractive value and alcohol soluble extractive value were found to be 36.87 ± 1.72% and 36.9 ± 1.38%. The pH value is measured as 5 which indicates that the drug is weekly acidic.
- HPTLC was done to identify phyto- chemicals and their Rf values were calculated.
- The drug is free of microbial contamination and pesticide residues.
- In heavy metals analysis mercury was not detected and lead, arsenic, cadmium were present within the permissible limit.
- Aflatoxin like B2, G1, G2 were not detected except B1 which was within the permissible limit.
- The disease Kalanjaga padai was taken for the clinical study with Amukkara chooranam (Internal) and Vettiver thylam (External) as a trial medicine and 30 cases were selected based on the approved protocol.
- The detailed study of Kalanjaga padai with reference to its etiology, pathogenesis, clinical features, diagnosis and treatment with trial drug was done.
- The results were observed by PASI score. Among the 30 cases treated 60% of the cases had very good improvement and 23.33% had good improvement and 16.66% of the cases had moderate improvement.

- Statistical analysis:The Mean Standard Deviation of VASI Score before and after treatment was 20.66 ± 17.36 and 2.39 ± 3.75 respectively which is **statistically significant (p < 0.0001)**.
- The analysis reveals that there is 88% reduction in erythema , thickening of skin and scales.

CONCLUSION

- The poly herbal formulation Amukkara chooranam (Internal) and Vettiver thylam (External) exhibited no toxicity on short term administration in children.
- The present clinical study confirms the efficacy and safety of the trial drug "Amukkara chooranam (Internal) and Vettiver thylam (External)" which are Siddha poly herbal formulations respectively.
- It was found to be having good result on Kalanjagapadai patients in reducing clinical symptoms like erythema , thickening of skin , scaling.
- The Mean Standard Deviation of PASI Score before and after treatment was 20.66 ± 17.36 and 2.39 ± 3.7 respectively which is **statistically significant ($p < 0.0001$)**. The analysis reveals that there is 88% reduction in erythema , thickening of skin , scling .
- From the above results, the trial drug "Amukkara chooranam (Internal) and Vettiver thylam (External)" provides very good improvement in the treatment of Kaalanjaga padai.
- The open clinical trial conducted on Kalanjaga padai with the trial drug Amukkara chooranam (Internal) and Vettiver thylam (External) creates a very good impact on the affected area. Hence the author recommends by increasing the trial period for about 90 days will bring out the tremendous effect of the drug in future which will reduce the stress of the affected children and enable to lead a healthy life.
- As a conclusion it can be stated that the Siddha Herbal formulation Amukkara chooranam (Internal) and Vettiver thylam (External) can be used as a safe and extremely efficacious drug towards the management of Kalanjaga padai in children which takes a huge toll of inducing psychological stress and impact on the cosmetic purposes.

BIBILIOGRAPHY

1) Dr.R.Thiagarajan/ Siddha SirappuMaruthuvam/ Indian System of Medicine and Homeopathy/ 1994
2) Kliegman, Behrman, Jenson/ Nelson textbook of pediatrics Vol II/ 18th Edition
3) S.P.RamaChandran / Brahmamuni karukkadai Soothiram 380 / Feb 1998 Edition
4) Kandhasamy mudhaliyar / Aathma Ratchamirthamennum Vaidhya Sarasangiagam
5) C.Kannusamy pillai/ Chigicha Rathna Deepam/2007 Edition
6) Dr.R.Thiyagarajan/Gunapadamthaadhuseevavaguppu/ published by Indian system of medicine and Homeopathy/ 2009/
7) The Siddha formulary of India part, Pg.no 155
8) PulippaaniVaithiyam 500
9) Dr.SaradaSubramaniam, A text book Human Physiology
10) Dr.Shanmugavelu,Ma., NoiNaadalNoiMudalNaadalThirattu, Tamil Nadu: H.P.I.M.,
11) Dr.Uthamaraayan,Ka.Sa., Siddha Maruththuvanga Surukkam,
12) Yogasana – A comprehensive description about the Yogasana, Morarji Desai National Institute of Yoga, 2008, 1st Edition
13) Chaurasia's Human Anatomy
14) . Gray's Anatomy
15) Indian Herbal Pharmacopoeia, Revised Edition- 2
16) NoiIllaNeri
17) Siddha Maruthuvam-Pothu
18) Pathartha Guna Chinthamani
19) Robinson's Pathology
20) Siddha system of diseases
21) Udal Thathuvam
22) Yugimuni 800
23) AgathiyarParipooranam – 400
24) Guru NaadiNool
25) Siddha MateriaMedica (Mineral and animal kingdom)
26) Dr.Shanmugavelu,Ma., NoiNaadalNoiMudalNaadalThirattu, Tamil Nadu: H.P.I.M.,
27) S.B.Ramachandiran /Yugimamunivarvaithiyachinthamani/ Second edition/ Thamarainoolagam/2005
28) Nelson 2002, Nelson textbook of paediatric vol III/Pg.no:2685

29) K.S.MurugesaMudhaliyar/ GunapadamMooligai part 1/ Indian System of Medicine and Homeopathy.
30) T.V.Sambasivam pillai Dictionary
31) Dr.DevaAasirvathamSaamuvel/ MarunthuSeiEyalumKalaiyum/ Published by Indian Medicine and Homeopathy/ 2014
32) Deva aasirvathamsaamuvel. MarunthuSeiIyalumKalaiyum. Published by Indian System of Medicine and Homeopathy. 2014. Pg.no:283.
33) Andrew's diseases of the skin, Harry L.Arnold, Clinical Professor of Dermatology, Pg no-120.
34) Dr.U.Satya Narayanan, Biochemistry, 2nd edition, revised & reprint 2005, Book& Allied (P) ltd, Kolkatta, India.
35) Dr.M.N.Chatterjee&Dr. Rana Text book of Medical Biochemistry, 2nd edition 1995, Shinde, Jeypee Brothers.
36) Brain KR, Turner TD. The Practical Evaluation of Phytopharmaceuticals. Bristol: Wright Scientechnica; 1975:36-45
37) Takashi Hiroi. Measurement of Particle Size Distribution in Turbid Solutions by Dynamic Light Scattering Microscopy. J Vis Exp. 2017; (119): 54885.
38) Lukasz Komsta, Monika Waksmundzka-Hajnos, Joseph Sherma. Thin Layer Chromatography in Drug Analysis. CRC Press, Taylor and Francis.
39) Wagner H. Plant Drug Analysis. A thin Layer chromatography Atlas.2nd ed. Heidelberg: Springer-Verlag Belgium; 2002:305, 227.
40) WHO guideline for assessing the quality of herbal medicines with reference to contaminants and residues. WHO Geneva. 2007.
41) Protocol for testing of Ayurvedic, Siddha and Unani Medicines, Dr D.R. Lohar published by Pharmacopoeial Laboratory for Indian Medicine, AYUSH, Ministry of Health and Family Welfare, Government of India, Ghaziabad, 2011.
42) G.Leelaprakash, S.MohanDass. In-vitro anti-inflammatory activity of methanol extract of enicostemmaaxillare. Int. J. Drug Dev. & Res., 2011, 3 (3): 189-196.
43) M. V. Anoop, A. R. Bindu . In-vitro Anti-inflammatory Activity Studies on Syzygiumzeylanicum (L.) DC Leaves. International Journal of Pharma Research & Review, August 2015; 4(8):18-27.
44) Evans WC. In: Trease and Evans' Pharmacognosy. Harcourt Baraco and Company Asia Pvt. Ltd. Singapore; 1996: 1–437.

45) Luciana de CASTRO. Determining Aflatoxins B1, B2, G1 And G2 In Maize Using Florisil Clean Up With Thin Layer Chromatography And Visual And Densitometric Quantification. Ciênc. Tecnol. Aliment. vol.21 no.1 Campinas Jan./Apr. 2001
46) http://www.ijprbs.com/issuedocs/2013/8/IJPRBS%20285.pdf
47) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3631759/
48) (https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4737945/)
49) NEHA ARORA AND SHASHI PANDEY-RAI*CELASTRUS PANICULATUS, AN ENDANGERED INDIAN MEDICINAL PLANT WITH MIRACULOUS COGNITIVE AND OTHER THERAPEUTIC PROPERTIES: AN OVERVIEW
50) http://www.ijpbs.net/vol-3/issue-3/pharma/33.pdf
51) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4106649/
52) https://www.ncbi.nlm.nih.gov/pubmed/15763384
53) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4441162/
54) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3631759/
55) Jinsong Zhang*, Jianpeng Dou, Shouqin Zhang, Qing Liang and Qingwei Meng Chemical composition and antioxidant properties of the essential oil and methanol extracts of rhizoma Alpinia officinarum from China in vitro.

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POST GRADUATE DEPARTMENT OF KUZHANDHAI MARUTHUVAM

CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN.

FORM I- SCREENING

1. S. No:	2. OP/ IP No:	3.Name:
4. Age:	5.Gender:	6.Date of Enrollment:
7. Date of completion:	8.Informant:	9.Reliablity:

INCLUSION CRETERIA	YES	NO
• Age between 5 to 12 years	☐	☐
• Erythema	☐	☐
• Scaling	☐	☐
• Itching	☐	☐
• Thickness (Hyper keratinisation)	☐	☐
• Auspitz sign	☐	☐
• Candle grease sign	☐	☐
• Dryness of the skin	☐	☐
• Cracks followed by itching	☐	☐
• Willing to take photographs Whenever required with his/her consent	☐	☐

EXCLUSION CRITERIA	YES	NO
• Eczema	☐	☐
• Fungal infection	☐	☐
• systemic (cardiac) involvement	☐	☐
• Evidences of secondary infections in the lesions (Such as cellulitis)	☐	☐
• Psoriasis with evidence of any other skin diseases (Seborrheic dermatitis, Pustular Psoriasis)	☐	☐

Signature of HOD

Signature of Principal Investigator

Sign of Guide

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FORM –II CONSENT FORM

CERTIFICATE BY INVESTIGATOR

I certify that I have disclosed all the details about the study in the terms readily understood by the parent/guardian

Signature _____

Date _____

Name _____ _____

CONSENT BY PARENT

I have been informed to my satisfaction, by the attending physician, the purpose of the clinical trial, and the nature of drug treatment and follow-up including the laboratory investigations to be performed to monitor and safeguard my son/daughter's body function.

I am aware of my right to opt my son/daughter out of the trail at any time during the course of the trail without having to give the reasons for doing so.

I, exercising my free power of choice, hereby give my consent to include my son/daughter as a subject in the clinical trial entitled Clinical Evaluation of Amukkara chooranam (internal) and Vettiver thylam (external) for Kalanjaga padai (psoriasis) in children.

Date Signature

Name

Place Signature of witness

Name

தேசிய சித்த மருத்துவ நிறுவனம்

அயோத்திதாச பண்டிதர் மருத்துவமனை, சென்னை-47

பட்டமேற்படிப்பு குழந்தை மருத்துவத்துறை

காளஞ்சகப் படை நோய்க்கான அமுக்கரா சூரணம் (உள்ளாட்சி) மற்றும் வெட்டிவேர் தைலம் (வெளியாட்சி) பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவஆய்வு

ஒப்புதல் படிவம்

ஆய்வாளரால் சான்றளிக்கப்பட்டது

நான் இந்த மருத்துவ ஆய்வை குறித்து அனைத்து விபரங்களையும் நோயாளியின் பெற்றோருக்கு புரியும் வகையில் எடுத்துரைத்தேன் என உறுதி அளிக்கிறேன்.

தேதி: **கையொப்பம்:**

இடம்: **பெயர்:**

நோயாளியின் பெற்றோர் ஒப்புதல்

என்னிடம் இந்த மருத்துவ ஆய்வின் காரணத்தையும், மருந்தின் தன்மை மற்றும் மருத்துவ வழிமுறைப் பற்றியும், இந்த மருத்துவத்தை தொடர்ந்து எனது குழந்தையின் உடல் இயக்கத்தைக் கண்காணிக்கவும், அதனைப் பாதுகாக்க பயன்படும் மருத்துவ ஆய்வுகள் பற்றியும் திருப்தி அளிக்கும் வகையில் ஆய்வு மருத்துவரால் விளக்கிக் கூறப்பட்டது.

நான் இந்த மருத்துவ ஆய்வின் போது காரணம் எதுவும் கூறாமல் எப்பொழுது வேண்டுமானலும் என் குழந்தையை விடுவித்துக் கொள்ளும் உரிமையை தெரிந்திருக்கிறேன்.

நான் என்னுடைய சுதந்திரமாக தேர்வு செய்யும் உரிமையைக் கொண்டு காளஞ்சகப் படை நோய்க்கான அமுக்கரா சூரணம் (உள்ளாட்சி) மற்றும் வெட்டிவேர் தைலம் (வெளியாட்சி) திறனை கண்டறியும் மருத்துவ ஆய்வுக்கு எனது குழந்தையை உட்படுத்த ஒப்புதல் அளிக்கிறேன்.

தேதி: **பெற்றொர் கையொப்பம்:**

இடம்: **பெயர்:**

சாட்சிக்காரர் கையொப்பம்:

பெயர்:

சாட்சிக்காரர் உறவுமுறை

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FORM II A - ASSENT FORM (By Patient)

I, _____ understand that my parents (mom and dad)/ guardian have/ has given permission (said it's okay) for me to take part in a clinical trial entitled Clinical evaluation of Amukkara Chooranam (Internal) and Vettiver Thylam (external) for KALANJAGA PADAI (Psoriasis) in Children done by PG Scholar Dr.M.Amala . .

I am taking part because I want to take part. I have been told that I can stop at any time I want to do so and nothing will happen to me if I want to stop.

Date: Signature of the patient

Place: Signature of Parent

தேசிய சித்த மருந்துவ நிறுவனம்

அயோத்திதாச பண்டிதர் மருத்துவமனை, சென்னை-47

பட்டமேற்படிப்பு குழந்தை மருத்துவத்துறை

காளஞ்சகப் படை நோய்க்கான அமுக்கரா சூரணம் (உள்ளாட்சி) மற்றும் வெட்டிவேர் தைலம் (வெளியாட்சி) பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்வு

ஒப்புதல் படிவம் குழந்தைக்கானது

"""""""""""""""""""" ஆகியநான் தேசிய சித்த மருத்துவ நிறுவனத்தில் பட்டமேற்படிப்பு குழந்தை மருத்துவத் துறையில் பயிலும் மரு.மா.அமலா அவர்களால் நடத்தப்படும் காளஞ்சகப் படை நோய்க்கான அமுக்கரா சூரணம் (உள்ளாட்சி) மற்றும் வெட்டிவேர் தைலம் (வெளியாட்சி) பரிகரிப்புத் திறனைக் கண்டறியும் மருத்துவ ஆய்வில் பங்கேற்பதற்கு எனது பெற்றோர் காப்பாளர் திருதிருமதி."""""""""""""""""""சம்மதம் தெரிவித்திருப்பதை நன்கு அறிவேன்.

எனக்கு இந்த ஆராய்ச்சி பற்றி புரியும் வகையில் எடுத்துரைக்கப்பட்டுள்ளது. இவ்வாராய்ச்சியில் இருந்து எப்போது வேண்டுமானாலும் விலக எனக்கு உரிமை இருக்கின்றது என்பதை பற்றியும் நன்கு தெரிந்துகொண்டு இந்த ஆராய்ச்சியில் பங்கேற்க சம்மதிக்கிறேன்.

தேதி: **குழந்தையின் கையொப்பம்**

இடம்: **பெயர்**

பெற்றொர்கையொப்பம்

பெயர்

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FORM III CASE REPORT FORM

Demographic data

Patient Id :	OP/IP sNo.	Visit Date : (__/__/____)
Name		
Age		
Gender Male ☐ Female ☐		Date Of Birth : (__/__/____)
Father/ Mother /Guardian Name		
Father's Occupation		
Father's Monthly Income		
Religion		
Socioeconomic Status		
Patient Informant		
Relaibility		

Postal Address

Contact No :

COMPLAINTS AND DURATION

HISTORY OF PRESENT ILLNESS

HISTORY OF PAST ILLNESS

Family History

Any Hereditary/ Familial disease Yes ☐ No ☐

If Yes, Details ----------

Family H/O similar condition ----------

Immunization History

Immunization complete ☐ Incomplete ☐ Complete but time lag ☐

Food habits

Veg ☐ Non-Veg ☐ Mixed ☐

Personal Habits	Yes	No
Picca	☐	☐
Nail biting	☐	☐
Thumb sucking	☐	☐
Eneuresis	☐	☐
Bowel (Regular)	☐	☐

General Examination	Yes	No
Pallor	☐	☐
Jaundice	☐	☐
Cyanosis	☐	☐
Clubbing	☐	☐
Pedal oedema	☐	☐
Lymphadenopathy	☐	☐

Vital signs

Pulse rate / mint -

Heart rate / mint -

Respiratory Rate / mint -

Temperature -

Anthropometry

Height - cm

Weight - kg

Examination of Other systems	**Normal**	**Affected**
Respiratory system	☐	☐
Cardio vascular system	☐	☐
Gastro intestinal system	☐	☐
Musculo skeletal system	☐	☐
Central nervous system	☐	☐
Endocrine system	☐	☐

SIDDHA ASSESSMENT

Nilam

Kurinji ☐ Mullai ☐ Marutham ☐ Neithal ☐ Paalai ☐

Kaala Iyalbu

Kaarkalam ☐ Koothirkaalam ☐ Munpanikaalam ☐

Pinpanikaalam ☐ Illavenirkaalam ☐ Muthuvenirkaalam ☐

Yaakai

Vatham ☐ Vatha Pitham ☐ Vatha Kabam ☐

Pitham ☐ Pitha vatham ☐ Pitha Kabam ☐

Kabam ☐ Kaba Vatham ☐ Kaba Pitham ☐

Gunam

Sathuvam ☐ Rasatham ☐ Thamasam ☐

Pori / Pulangal

	Normal	Affected	Normal	Affected	Remarks
Mei / unarvu	☐	☐	☐	☐	
Vaai / suvai	☐	☐	☐	☐	
Kan / parvai	☐	☐	☐	☐	
Mooku / natram	☐	☐	☐	☐	
Sevi / olli	☐	☐	☐	☐	

Kanmendhirium / Kanmavidayam

	Normal	Affected	Normal	Affected	Remarks
Kai / dhanam	☐	☐	☐	☐	
Kaal / ghamanam	☐	☐	☐	☐	
Vaai / vaaku	☐	☐	☐	☐	
Eruvaai / visarkam	☐	☐	☐	☐	
Karuvaai / anantham	☐	☐	☐	☐	

Uyir Thathukkal

Vatham1

	Normal	Affected	Remarks
Pranan			
Abanan	☐	☐	
Viyanan	☐	☐	
Uthanan	☐	☐	
Samanan	☐	☐	
Nagan	☐	☐	
Koorman	☐	☐	
Kirukaran	☐	☐	
Devathathan	☐	☐	
Dhanajeyan	☐	☐	

Pitham

	Normal	Affected	Remarks
Analam	☐	☐	
Ranjagam	☐	☐	
Saathagam	☐	☐	
Alosagam	☐	☐	
Prasagam	☐	☐	

Kabam

	Normal	Affected	Remarks
Avalambagam	☐	☐	
Kilethagam	☐	☐	
Pothagam	☐	☐	
Tharpagam	☐	☐	
Santhigam	☐	☐	

Udalthathukkal

	Normal	Affected	Remarks
Saaram	☐	☐	
Senneer	☐	☐	
Oon	☐	☐	
Kozhuppu	☐	☐	
Enbu	☐	☐	
Moolai	☐	☐	
Sukilam / Suronitham	☐	☐	

Envagai Thervugal

Naa	Normal	Affected	Remarks
Niram	☐	☐	
Thanmai	☐	☐	
Suvai	☐	☐	

Niram	Normal	Affected
	☐	☐

Mozhi	Normal	Affected
	☐	☐

Vizhi

Niram	☐	☐
Thanmai	☐	☐
Paarvai	☐	☐

Sparisam ☐ ☐

Malam	**Normal**	**Affected**
Niram	☐	☐
Nurai	☐	☐
Elagal	☐	☐
Erugal	☐	☐

Moothiram

Neerkuri:	Niram	☐	☐
	Edai	☐	☐
	Nurai	☐	☐
	Manam	☐	☐
	Enjal	☐	☐

Neikuri:

Vatham	☐
Pitham	☐
Kabam	☐
Others	☐

Naadi

Clinical examination:

Clinical examination of skin:

		Before Treatment	After Treatment
1.Site			
2.Shape:	Coin shape	☐	☐
	Irregular	☐	☐
	Dispersed	☐	☐

	Present	Absent	Present	Absent
3.Etythema:	☐	☐	☐	☐
4:Macule:	☐	☐	☐	☐
5.Papule:	☐	☐	☐	☐
6.Nodule:	☐	☐	☐	☐
7.Vesicle	☐	☐	☐	☐
8.Pustule:	☐	☐	☐	☐
9.Hypo / Hyperpigmentation	☐	☐	☐	☐

10.Itching:	No	☐	☐
	Mild	☐	☐
	Moderate	☐	☐
	Severe	☐	☐
11.Scaling:	Mild	☐	☐
	Moderate	☐	☐
	Severe	☐	☐

	Present	Absent	Present	Absent
12.Fissures:	☐	☐	☐	☐

13.Oozing :	No	☐	☐
	Mild	☐	☐
	Moderate	☐	☐
	Severe	☐	☐

	Present	Absent	Present	Absent
14.Lichenification:	☐	☐	☐	☐

	Present	Absent	Present	Absent
15.Auspitz sign:	☐	☐	☐	☐

	Present	Absent	Present	Absent
16.Kobner's Phenomenon	☐	☐	☐	☐

	Present	Absent	Present	Absent
17.Candle grease sign	☐	☐	☐	☐

Examination of nails	**Present**	**Absent**
Pitting	☐	☐
Thickening	☐	☐
Collection of Hyperkeratotic debris	☐	☐
Separation of distal portion of nail	☐	☐

Examination of joints	**Yes**	**No**
Joint Involvement	☐	☐

Date: Signature of Investigator

Place: Signature of Guide

CLINICAL ASSESSMENT

PASI Calculation					
Patient name					
Date					
Plaque Characteristic	**Rating Score**	**Body region and weighting factor**			
		Head	**Upper Limbs**	**Trunk**	**Lower Limbs**
Erythema	**0 = None**				
Thickness	**1 = Slight**				
	2 = Moderate				
Scaling	**3 = Severe**				
	4 = Very Severe				
Totals		**A1=**	**A2=**	**A3=**	**A4=**
Weighting Factor		**A1x0.1=B1**	**A2x0.2=B2**	**A3x0.3=B3**	**A4x0.4=B4**
Surface area totals		**B1=**	**B2=**	**B3=**	**B4=**
Degree of involvement as % for each body region affected (score each region between 0 and 6)	**0 = None**				
	1 = 1-9%				
	2 = 10-29%				
	3 = 30-49%				
	4 = 50-69%				
	5 = 70-89%				
	6 = 90-100%				
Surface area totals x % involvement totals Sum Scores above =		**B1xscore= C1**	**B2xscore= C2**	**B3xscore= C3**	**B4xscore= C4**

NATIONAL INSTITUTE OF SIDDHA

AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST GRADUATE DEPARTMENT OF KUZHANDHAI MARUTHUVAM

CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN.

FORM VI -DRUG COMPLIANCE FORM

S. NO: --------- OPD/IPD NO: ---------- NAME: ---------- REG NO:

DAY	Date	Morning	Evening
I visit 1			
2			
3			
4			
5			
6			
7			
II visit 1			
2			
3			
4			
5			
6			
7			
III visit 1			
2			
3			
4			
5			
6			
7			
IV visit 1			
2			
3			

4			
5			
6			
7			
V visit 1			
2			
3			
4			
5			
6			
7			
VI visit 1			
2			
3			
4			
5			
6			
7			
VII visit 1			
2			
3			
4			
5			

Date: Signature of the Investigator

Place: Signature of the Guide

NATIONAL INSTITUTE OF SIDDHA

AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST GRADUATE DEPARTMENT OF KUZHANDHAI MARUTHUVAM

CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN.

1. S.No:	2. OP/ IP No:	3.Name:
4.Age:	5.Gender:	6.Date of Enrollment:
7. Date of completion:	8.Informant:	9.Reliablity:

FORM VIII _- WITHDRAWAL

Date of trial commencement :

Date of withdrawal from trial :

Reason(s) for withdrawal : Yes/ No

Long absence at reporting : Yes/ No

Irregular treatment : Yes/ No

Shift of locality : Yes/ No

Complication adverse reactions if any : Yes/ No

Exacerbation of symptoms : Yes/ No

Patient not willing to continue : Yes/ No

Date: Signature of Principal Investigator

Place: Signature of Guide

NATIONAL INSTITUTE OF SIDDHA

AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST GRADUATE DEPARTMENT OF KUZHANDHAI MARUTHUVAM

CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN.

1. S.No:	2. OP/ IP No:	3.Name:
4.Age:	5.Gender:	6.Date of Enrollment:
7. Date of completion:	8.Informant:	9.Reliablity:

FORM VIII _- WITHDRAWAL

Date of trial commencement :

Date of withdrawal from trial :

Reason(s) for withdrawal : Yes/ No

Long absence at reporting : Yes/ No

Irregular treatment : Yes/ No

Shift of locality : Yes/ No

Complication adverse reactions if any : Yes/ No

Exacerbation of symptoms : Yes/ No

Patient not willing to continue : Yes/ No

Date: Signature of Principal Investigator

Place: Signature of Guide

NATIONAL INSTITUTE OF SIDDHA

AYOTHIDOSS PANDITHAR HOSPITAL, CHENNAI – 600 047.

POST GRADUATE DEPARTMENT OF KUZHANDHAI MARUTHUVAM

CLINICAL EVALUATION OF AMUKKARA CHOORANAM (INTERNAL) AND VETTIVER THYLAM (EXTERNAL) FOR KALANJAGA PADAI (PSORIASIS) IN CHILDREN.

1. S. No:	2. OP/ IP No:	3.Name:
4.Age:	5.Gender:	6.Date of Enrollment:
7. Date of completion:	8.Informant:	9.Reliablity

Form VII – ADVERSE REACTION FORM

Name :

Age :

Gender :

OPD/ IPD No :

Registration No :

Date of trial commencement :

Date of withdrawal from trial :

Description of adverse reaction :

Date : Signature of Investigator

Place : Signature of Guide

NATIONAL PHARMACOVIGILANCE PROGRAMME FOR SIDDHA DRUGS

Reporting Form for Suspected Adverse Reactions to Siddha Drugs

Please note: i. **All** consumers / patients and reporters information will remain confidential.

ii. It is requested to report all suspected reactions to the concerned, even if it does not have complete data, as soon as possible.

Peripheral Center code: State:

1. Patient / consumer identification (please complete or tick boxes below as appropriate)

<table>
<tr><td>Name</td><td>Father name</td><td rowspan="2">Patient / Record No.</td></tr>
<tr><td>Ethnicity</td><td>Occupation</td></tr>
<tr><td colspan="2" rowspan="2">Address
Village / Town
Post / Via
District / State</td><td>Date of Birth / Age:</td></tr>
<tr><td>Sex: Male / Female
Weight :
Degam:</td></tr>
</table>

2. Description of the suspected Adverse Reactions (please complete boxes below)

Date and time of initial observation		Season:
Description of reaction		Geographical area:

3. List of all medicines / Formulations including drugs of other systems used by the patient during the reporting period:

Medicine	**Daily dose**	**Route of administration & Vehicle - Adjuvant**	**Date**		**Diagnosis for which medicine taken**
			Starting	**Stopped**	
Siddha					
Any other system of medicines					

4. Brief details of the Siddha Medicine which seems to be toxic :

Details	Drug – 1	Drug – 2	Drug - 3
a) Name of the medicine			
b) Manufacturing unit and batch No. and date			
c) Expiry date			
d) Purchased and obtained from			
e) Composition of the formulation / Part of the drug used			

b) Dietary Restrictions if any

c) Whether the drug is consumed under Institutionally qualified medical supervision or used as self medication.

d) Any other relevant information.

5. Treatment provided for adverse reaction:

6. The result of the adverse reaction / side effect / untoward effects (please complete the boxes below)

<table>
<tr><td>Recovered:</td><td>Not recovered:</td><td>Unknown:</td><td>Fatal:</td><td>If Fatal
Date of death:</td></tr>
<tr><td colspan="2" rowspan="2">Severe: Yes / No.</td><td colspan="3">Reaction abated after drug stopped or dose reduced:</td></tr>
<tr><td colspan="3">Reaction reappeared after re introduction:</td></tr>
</table>

Was the patient admitted to hospital? If yes, give name and address of hospital	

7. Any laboratory investigations done to evaluate other possibilities? If Yes specify:

8. Whether the patient is suffering with any chronic disorders?

Hepatic Renal Cardiac Diabetes Malnutrition

Any Others

9. H/O previous allergies / Drug reactions:

10. Other illness (please describe):

11. Identification of the reporter:

Type (please tick): Nurse / Doctor / Pharmacist / Health worker / Patient / Attendant / Manufacturer / Distributor / Supplier / Any others (please specify)
Name:
Address:
Telephone / E – mail if any :

Signature of the reporter: **Date:**

Please send the completed form to:

Name & address of the RRC-ASU / PPC-ASU	The Director National Institute of Siddha, (Pharmacovigilance Regional Centre For Siddha Medicine), Tambaram Sanatorium, Chennai-600 047. ☏ (O) 044-22381314 Fax : 044 – 22381314 Website : www.nischennai.org Email: nischennaisiddha@yahoo.co.in

* ** * * * *

This filled-in ADR report may be sent within one month of observation /occurrence of ADR

Who Can Report?

⇒ Any Health care professionals like Siddha Doctors / Nurses / Siddha Pharmacists / Patients etc.

What to Report?

⇒ All reactions, Drug interactions,

Confidentiality

⇒ The patient's identity will be held in strict confidence and protected to the fullest extent

Signature of the Investigator:

Signature of the Lecturer:

Date:

Station:

Signature of the Investigator:

Signature of the Lecturer: Signature of the HOD

NATIONAL INSTITUTE OF SIDDHA- राष्ट्रीय सिद्ध संसथान
Ministry of AYUSH- आयुष मंत्रालय
GOVERNMENT OF INDIA-भारत सरकार
TAMBARAM SANATORIUM, CHENNAI -600 047 -ताम्बरम सनटोरियमचेन्नई -600 047
फ़ोन\Tele : 044-22411611 फैक्स\Fax : 22381314
ईमेल: nischennaisiddha@yahoo.co.in वेब :www.nischennai.org

F.No.NIS/6-20/IEC/15-16 Dt: 14.10.2016

CERTIFICATE

Address of Ethics Committee: National Institute of Siddha, Tambaram Sanatorium, Chennai-600047, Tamil Nadu, India	
Principal Investigator: Dr. M.Amala – I year, Dept.of Kuzhanthai Maruthuvam	
Protocol Title:- Clinical evaluation of Amukkara Chooranam (Internal) and Vettiver Thylam (External) for Kalanjaga Padai (Psoriasis) in Children.	
Documents filed	1) Protocol, 2) Data Collection forms
Clinical trial Protocol (others – Specify)	**Yes-(M.D-Dissertation)**
Informed consent documents	**Yes**
Any other documents	-
Date of IEC approval & its number	**NIS/IEC/2016/11-17/ 14.10.2016**

We approve the trial to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study, any SAE occurring in the course of the study.

(Dr.V.Subramanian)
Chairman

(Prof.Dr.V.Banumathi)
Member Secretary

NATIONAL INSTITUTE OF SIDDHA ★ CHENNAI 600 047

NATIONAL INSTITUTE OF SIDDHA, CHENNAI – 600047

BOTANICAL CERTIFICATE

Certified that the following plant drugs used in the Siddha formulation **"Amukkara Chooranam"** (Internal) and **Vettiver thylam** (External) taken up for Post Graduation Dissertation studies by **Dr.M.Amala** M.D.(S), II year, Department of Kuzhandhai Maruthuvam, 2017, are identified through Visual inspection, Experience, Education & Training, Organoleptic characters, Morphology and Taxonomical methods as

Withania somnifera Dunal (Solanaceae), Root
Piper cubeba Linn. f. (Piperaceae), Fruit
Hyoscyamus niger Linn. (Solanaceae), Seed
Smilax china Linn. (Liliaceae), Root
Nigella sativa Linn. (Ranunculaceae), Seed
Terminalia chebula Retz. (Combretaceae), Fruit
Zingiber officinale Rosc. (Zingiberaceae), Dried Rhizome
Picrorhiza kurroa Royle ex Benth. (Scrophulariaceae), Root
Celastrus paniculatus Willd. (Celastraceae), Seed
Alpinia officinarum Hance (Zingiberaceae), Rhizome
Piper longum Linn. (Piperaceae), Fruit
Acacia pennata (Linn.) Willd. (Mimosaceae), Leaf
Saccharum officinarum Linn. (Poaceae), Crystal sugar
Vettiveria zizanoides (Linn.) Nash (Poaceae), Root
Glycyrrhiza glabra Linn. (Fabaceae), Root
Cedrus deodara (Roxb.) Loud. (Pinaceae), Wood
Sesamum indicum Linn. (Pedaliaceae), Seed oil

MEDICINAL BOTANY * National Institute of Siddha * CHENNAI 600 047

Certificate No: NISMB2912017

Date: 23-3-17

Authorized Signatory

Dr. D. ARAVIND, M.D.(s),M.Sc.,
Assistant Professor
Department of Medicinal Botany
National Institute of Siddha
Chennai - 600 047. INDIA

Noble research solutions
We Trust in Quality and Ethics

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We Trust in Quality and Ethics

E-mail: nobleresearchsolutions@gmail.com
Contact: 9710437419, Admin: 044 - 42691289

Project ID	NRS/AS/0154/06/2018
Name and Address of the Researcher	Dr.Amala National Institute of Siddha, Chennai, Tamil Nadu, India
Parameter Requested by the Customer for Analysis	In-Vitro Anti-Inflammatory Activity
Sample Received	Courier
Sample –ID	Amukra Chooranam - AC
Description of the Sample	Semi solid
Method of Analysis	UV- Spectroscopic method
Analysis Category	In-vitro
Date of Analysis	26/06/2018
Result of Analysis	Test Report Attached - Annexure I

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E-mail : nobleresearchsolutions@gmail.com
info@nobleresearchsolutions.com
Contact : 9710437419, Admin : 044 - 42691289

CERTIFICATE

Date: 22.03.2018

To,

Dr.M.Amala

National Institute of Siddha, Chennai,Tamil Nadu, India

Project Id: **NRS/AS/0105/03/2018**

This is to certify that Dr.M.Amala from National Institute of Siddha, Chennai, has carried out the following activity at our facility for the trial drug *Amukra Chooranam (AC)*

The lists of activities are as follows

- *Phytochemical Analysis*
- *Fluorescence analysis*
- *Aflatoxin Assay By TLC (B1,B2,G1,G2)*
- *Pesticides residues*
- *Heavy Metal Analysis*
- *HPTLC*
- *TLC*
- *Sterility Evaluation*
- *Physicochemical Evaluation*

NOBLE RESEARCH SOLUTIONS CHENNAI TAMIL NADU, INDIA.

for NOBLE RESEARCH SOLUTIONS

Note: Annexures was attached as a separate enclosure along with this report.

Services offered : Standardization and Characterization of ASU formulations
In-vitro and In-silico Evaluations / Instrumental analysis / Histopathological Analysis
Blood & Serum Estimations
Thesis Writing / Research Article Preparation and Publication Services

உலகத் தமிழாராய்ச்சி நிறுவனம்

தரமணி, சென்னை - 600 113

மற்றும்

Dr. ஜெ. நினைவு அறக்கட்டளை

இணைந்து நடத்தும்

திருமந்திரம் மற்றும் வர்மஅறிவியல் பன்னாட்டுப் பயிலரங்கம்

IWTV2016

INTERNATIONAL WORKSHOP ON TIRUMANDIRAM & VARMAN SCIENCE

சான்றிதழ்

திரு / திருமதி / செல்வி ..... அவர்கள்

15 மற்றும் 17 ஏப்ரல் 2016, ஆகிய இரண்டு நாள் நடைபெற்ற பன்னாட்டுப் பயிலரங்க பயிற்சி பட்டறையில் பங்கேற்றுப் பயிற்சி பெற்றமைக்காக இச்சான்றிதழ் வழங்கப்படுகிறது.

Dr.ம.பா.அகத்தியர்
பயிலரங்கக்குழு தலைவர்,
Dr. ஜெ. நினைவு அறக்கட்டளை,
வடபழனி, சென்னை - 600 026

முனைவர். தி.மகாலட்சுமி
திருப்பணி இருக்கை, நிறுவனர்
உலகத் தமிழாராய்ச்சி நிறுவனம்
தரமணி, சென்னை - 600 113

முனைவர். கோ.விசயராகவன்
இயக்குநர்
உலகத் தமிழாராய்ச்சி நிறுவனம்
தரமணி, சென்னை - 600 113

The Tamil Nadu Dr. M.G.R. Medical University

69, Anna Salai, Guindy, Chennai - 600 032.

CONTINUING EDUCATION PROGRAMME ACCREDITATION CERTIFICATE

This is to certify that COMMON ATRIOVENTRICULAR (AV) ORIFICE - CANAL - ANATOMIC VARIATIONS AND SURGICAL SIGNIFICANCE provided by FRONTIER LIFELINE PVT. LTD., CHENNAI on 20.08.2016 has been accredited by the Continuing Education Programme Accreditation Committee. This academic activity is awarded with 05 Credit Points in the Category III

REGISTRAR &
Secretary, CEP Accreditation

Prof. Dr. S. GEETHALAKSHMI, M.D., Ph.D.,
Vice-Chancellor

FRONTIER MEDIVILLE

(A Unit of FRONTIER LIFELINE HOSPITAL & Dr.K.M.CHERIAN HEART FOUNDATION)

Elavur/Edoor Village, Gummidipoondi Taluk, Thiruvallur District, Tamilnadu, India - 601 201. Tel : +91 44 27940001/ 15

V CME - A V CANAL & E C DEFECTS

This is to certify that Dr. AMALA . M. NIS

has participated in the V C M E and Work Shop Programme conducted under the auspices of the Maurice Lew & Saroja Bharati International Centre of Excellence in Cardiac Pathology held at Frontier Mediville on 20th August 2016 on 'Common Atrioventricular (AV) Orfice - Canal, Anatomic variations and surgical significance'

Dr. K.M.Cherian
Chairman & CEO
Frontier Lifeline Hospital

Dr.Saroja Bharati
Prof. Pathology Rush Medical University
Chicago, USA

Dr. Sarasa Bharati
HOD Pathology & Advisor - Academics
Frontier Lifeline Hospital

Reg. Office : R 30 C, Ambattur Industrial Estate Road, Chennai - 600 101. India. Tel.: +91 44 42017575, 2656422 / 6252 Web : www.frontierlifeline.com / www.frontiermediville.com

The Tamil Nadu Dr.M.G.R.Medical University

69, Anna Salai, Guindy, Chennai - 600 032.

This Certificate is awarded to Dr/Mr/Mrs.... AMALA.M .....

For participating as ~~Resource Person~~ / Delegate in the Twenty First Workshop on

"RESEARCH METHODOLOGY & BIOSTATISTICS"

*For **AYUSH Post Graduates & Researchers***

Organized by the Department of Siddha

The Tamil Nadu Dr. M.G.R. Medical University From 25th to 29th April 2016.

Dr.N.KABILAN, MD(S).
PROF & HEAD
DEPT.OF SIDDHA

Prof.**Dr.P.ARUMUGAM,** M.D.,
REGISTRAR i/c

Prof. **Dr.S.GEETHALAKSHMI,** M.D., Ph.D.,
VICE CHANCELLOR

NATIONAL INSTITUTE OF SIDDHA

(Ministry of AYUSH, Government of India)

Tambaram Sanatorium, Chennai - 600 047.

WORKSHOP ON "DECIPHERING TAMIL SIDDHA MANUSCRIPTS"

(27.04.17 TO 29.04.17)

Certificate of Participation

This is to certify that

Dr. M.Amala, P.G. Scholar, NIS

has participated in Workshop on Deciphering Tamil Siddha Manuscripts

organised by National Institute of Siddha in association with Centre for Traditional Medicine & Research

held from 27.04.2017 - 29.04.2017 at NIS, Chennai - 47

Dr. S. Visweswaran
Lecturer & Co-ordinator
Dept. of Gunapadam, NIS

Dr. T. Thirunarayanan
Secretary
Centre for Traditional Medicine & Research

Prof. Dr. V. Banumathi
Director
National Institute of Siddha